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Abstracts

World Congress on Safety and Health at Work
Global Forum for Prevention

Safety and health at work: A societal responsibility

June 29 ~ July 2, 2008
COEX Convention Center, Seoul, Korea

International Labour Organization
issa INTERNATIONAL SOCIAL SECURITY ASSOCIATION
Korea Occupational Safety and Health Agency

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XVIII World Congress on
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Abstracts

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XVIII World Congress on Safety and Health at Work

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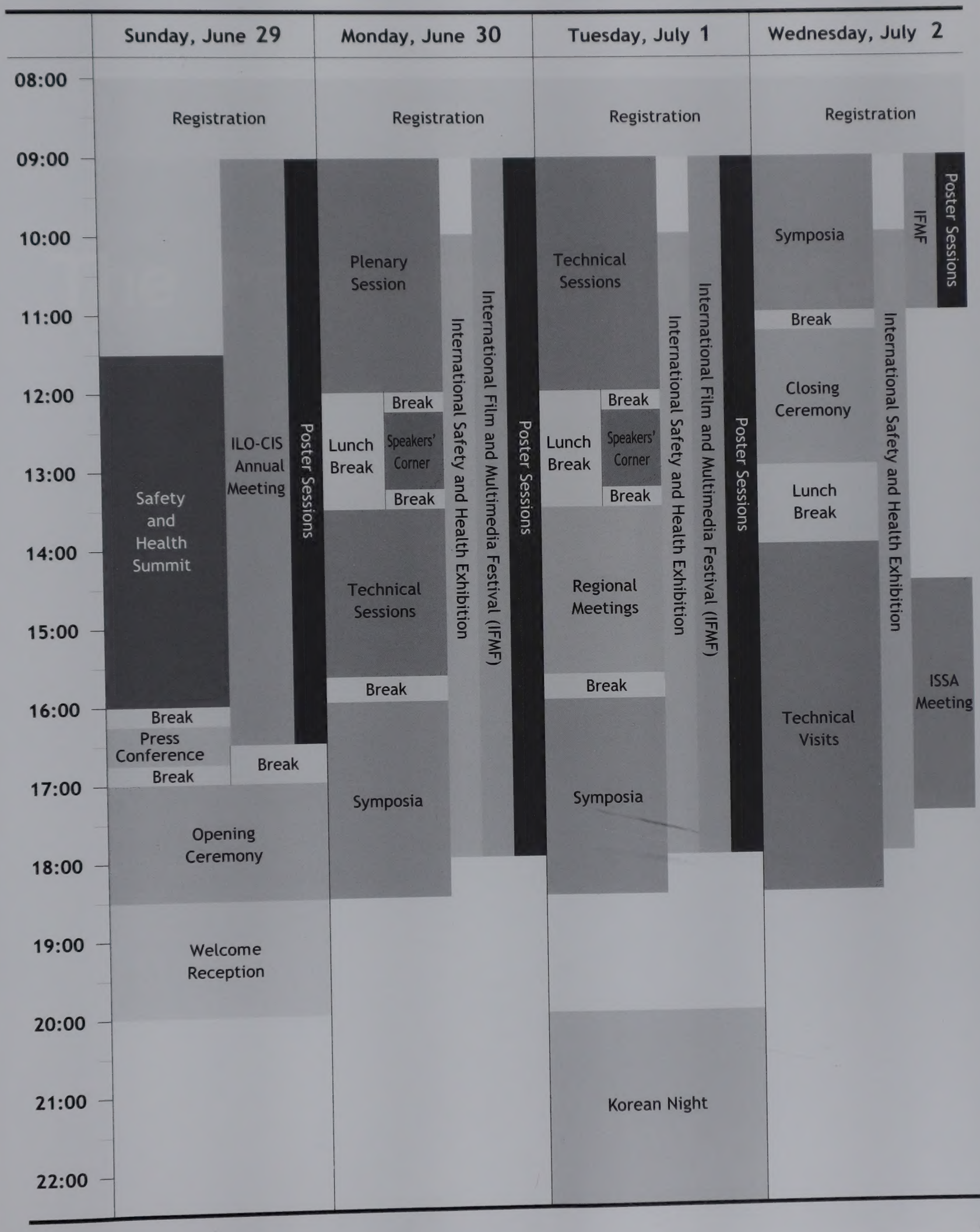
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XVIII World Congress on
Safety and Health at Work

The Programme in Detail

The Programme in Detail

Monday, June 30

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❖ Technical Session Ⅱ

[TS02] Impact of Changing Working Conditions on Workers' Protection

Speakers' Corner

[SC05] Psychosocial Factors

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Technical Session

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❖ Regional Meeting: Asia Pacific Ⅱ

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Symposia

XVIII World Congress on
Safety and Health at Work

Abstracts

Monday, June 30

XVIII World Congress on Safety and Health at Work

Global Forum for Prevention

Safety and health at work: A societal responsibility

Plenary

Plenary Session

[PL] Plenary Session

June 30, 09:00 - 12:00
Room: Convention Hall 11, COEX

Chairperson:
President, KOSHA

[PL-01]
Strategies and Programmes of Safety and Health for the Future

Sudha Pillai

Secretary, Ministry of Labour and Employment, India

[PL-02]
Impact of Changing Working Conditions on Workers' Protection

Joachim Breuer

German Social Accident Insurance, Germany

Globalisation is dramatically changing economies and societies in industrialised as well as emerging countries. The process of globalisation is itself a combination of economic, technological, socio-cultural and political forces. Especially the changing economic and socio-cultural aspects are influencing working conditions, around the world. The impact differs concerning the consequences for industrialised and for emerging countries but strongly influences both. Concerning occupational safety and health (OSH) the main differences are in the varying starting positions: In industrialised countries the workforce is presentlyconfronted with increasing pressure of competition, new technologies, new work forms and an increase of growing virtualisation of work. This is furthermore accompanied by demographic change with the consequence of longer working life and a growing general fear of job loss, accompanied by a dramatic increase of precarious and temporary work.

It is a great challenge for enterprises and supporting institutions dealing with OSH (such as labour inspections and other OSH advisers) to manage new emerging OSH risks associated with the described transformations. The situation of emerging countries is further complicated by non- or rudimentary existing OSH institiutions and structures and, as an aggravating factor, by limited financial resources.

Due to the fast developing globalisation there is a worldwide tendency to strengthen strategic approaches in OSH. This applies to the EU and its member states as well as to other developed regions of the world, such as Southeast Asia. It is strongly enforced by strategic approaches, e.g. by the International Labour Organisation (ILO Promotional Framework for OSH) and the World Health Organisation (WHO Global Plan of Action on Workers' Health 2008-2017). Presently, various strategic approaches and measures of different EU member states are recognised, monitored and associated with the EU Community Strategy 2007-2012. OSH strategies have to be adapted to the individual needs of national or regional societies and economies.

Additionally, there is a strong need for specifically adapted prevention measures dealing with the mentioned new and emerging risks on an operational and an individual level. The German Social Accident Insurance (DGUV) is following both approaches, supporting and executing common strategic measures on the one hand and developing and supporting individual and prevention measures to tackle new and emerging risks on the other hand. Some examples of new problems and possible good practice approaches will be presented.

[PL-03]
New Challenges and Opportunities in Occupational Safety and Health

John Howard

NIOSH (National Institute for Occupational Safety and Health), United States

Introduction In the early 1900s, the following classified ad appeared in the London Times: "Men wanted for hazardous journey. Low wages, bitter cold, long hours of complete darkness. Safe return doubtful. Honour and recognition in the event of success. Signed E. Shackleton."
The next morning 5,000 men were lined up outside the Times' offices ready to sign on for the dangerous mission, whatever it might be. Ernest Shackleton was seeking crew members for an expedition to reach the South Pole on a ship called the Endurance.

As safety and health professionals, our mission for the 21st Century is not to lead men and women into hazardous territory on an once-in-a-lifetime journey to achieve a moment of glory. Rather, we want to sustain every day a quality of life for workers that brings them home whole and healthy every night. Our mission doesn't draw huge crowds overnight. But our numbers are expanding and public support for our efforts is strong and growing.

Though Shackleton never reached the South Pole, he achieved fame for his explorations because he responded to the challenge by seizing opportunities as they arose and executed so well his carefully thought out plan. He proved himself exceptionally adept in finding creative, life-saving solutions for impossible situations.

As we work in the third millennium, do we have a plan, a strategic plan, to guide us? Like Shackleton, we should be prepared to modify that plan as we move forward to achieve our objectives. Our goals are simple: We want to reduce injuries and illnesses, create safety-conscious workplace cultures in our nations and workplaces and secure public confidence in our efforts.

Ladies and gentlemen take a moment and look around; everyone in this auditorium today shares these goals, as we consider our joint mission of safe work for the 21st Century. In the next few minutes I want to talk briefly about just a few of the challenges and opportunities we face in our global efforts. • • •

[PL-04]
Safety and Health Management Systems

Daniel Podgorski

Central Institute for Labour Protection - National Research Institute, Poland

In some countries specifications for OSH management systems (OSH-MS) are laid down in voluntary standards while in others are established by legal regulations. On the international level, the most important document on OSH-MS is ILO-OSH 2001. The ILO Guidelines are intended for application at a national and an enterprise levels, which constitutes their principal advantage as compared with other OSH-MS standards. Furthermore, the document reflects fundamental ILO values, such as tripartism and relevant ILO conventions (e.g. Convention on OSH no. 155).

The assessment/management of risks is regarded as a core element of OSH-MS. Enterprises should establish procedures comprising identification of all possible hazards and estimation of their risk level. The risk estimation should be based on the information on the probability of occurrence and the severity of potential harm of the hazardous event.

Another important issue related to OSH-MS effectiveness is workers' participation. The scientific evidence as well as ILO Guidelines indicate that workers and their OSH representatives should be involved in OSH-MS. However some studies revealed that the level of workers' participation in OSH-MS is fairly low and should be increased.

Research concerning economic benefits of OSH show that cost effectiveness should be considered in the promotion of OSH-MS. One of the economic incentives could be the system of a differentiated premium rate of work accident insurance.

The OSH-MS do not function well in SMEs. ILO-OSH 2001 foresee elaboration of OSH-MS guidelines tailored to the SMEs' needs, but no good model for such a system exists. A number of enterprises implementing OSH-MS will significantly grow if a specific OSH-MS model for SMEs is developed and disseminated.

Additionally, it is important to guarantee that the promotion of OSH-MS is addressed in the international and national strategies, and that the national promotional programmes are in line with the ILO-OSH 2001 Guidelines.

Technical Session

Technical Session

Technical Session I

[TS01] Safety and Health Management Systems (I)

June 30, 13:30 - 15:45
Room: 101/102, COEX

Moderator:
Daniel Podgorski
Central Institute for Labour Protection - National Research Institute, Poland

[TS01-01]
ILO Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)

Sameera Maziad Al-Tuwaijri

ILO

At the onset of the twenty-first century, a heavy human and economic toll is still exacted by unsafe and unhealthy working conditions. The *Guidelines* call for coherent policies to protect workers from occupational hazards and risks while improving productivity. They present practical approaches and tools for assisting organizations, competent national institutions, employers, workers and other partners in establishing, implementing and improving occupational safety and health management systems, with the aim of reducing work-related injuries, ill health, diseases, incidents and deaths.

The *Guidelines* may be applied on two levels – national and organizational. At the national level, they provide for the establishment of a national framework for occupational safety and health (OSH) management systems. They also provide precise information on developing voluntary arrangements to strengthen compliance with regulations and standards, which, in turn, lead to continual improvement of OSH performance.

At the organizational level, the *Guidelines* encourage the integration of OSH management system elements as an important component of overall policy and management arrangements. Organizations. employers, owners, managerial staff. workers and their representatives are motivated in applying appropriate OSH management principles and methods to improve OSH performance.

[TS01-02]
Occupational Safety and Health Management Systems Development and Implementation in Thailand

Chaiyuth Chavalitnitikul

Ministry of Labor, Thailand

Occupational accidents and diseases have been a major concern of the Ministry of Labour (MOL) for many years. Although the accident statistics have been declining but the rates are still high compared with many other countries. The MOL has been developing and strengthening the national occupational safety and health systems for providing OSH protection and services to all workers continuously for more than two decades. The systems are aiming to reduce occupational accidents and diseases by means of (1) improvement of legal enforcement and compliance monitoring systems, (2) promoting the implementation of OSH in the enterprise, (3) formulating Ministerial Regulation on Occupational Safety and Health Management System (OSH-MS), and etc. The development and implementation of OSH-MS has taken place at the MOL since 1995. In 1997 the MOL encouraged the Ministry of Industry to develop a new Thai Industrial Standard on OHS-MS based on the British Standard 8800, called "TIS 18000-OHS-MS". Since the TIS 18000 is the voluntary standard, and by itself does not have enough flexibility especially for small business, currently only limited number of enterprises that have achieved the requirements and have been certified. As the national OSH policies and plans, and legislative mandate under the Labour Protection Act, 1998 have given the direction for further development of the Ministerial Regulation on OSH-MS. During 2003-2008 the National Tripartite Committee on OSH has been supporting the MOL to develop the Ministerial Regulation on OSH-MS based on the framework of the ILO Guidelines on OSH-MS (ILO-OSH 2001). Recently, the Cabinet has approved the proposed draft Ministerial Regulation on OSH-MS of the MOL. This draft regulation will be requiring the organizations employing 50 or more workers must develop and implement the OSH-MS within a specified time frame by an authorized institution which has been licensed from the MOL. It is expecting that by the end of 2008 the draft regulation would be promulgated and to be enforced by 2009.

[TS01-03]
Safety and Health Management Systems Case of France

Murielle Gauvain

Association Française de Normalization (AFNOR Certification), France

Occupational Safety and health management is a major challenge for any organisation that engages in a process of progress and allows:

- To identify and assess risks;
- To take into account the requirements of increasingly complex nature (legal, regulatory, contractual…) and to meet the needs and expectations of employees and their representatives;
- Contribute to the social dimension of sustainable development and to improving the organisation's image regarding its OSH performance.

Faced with these multiple benefits, many documents (standards, guidelines, …) have been developed in recent years. Among them, ILO-OSH 2001, "Guidelines on occupational safety and health management systems", developed by International Labour Office (ILO), is the only international reference adopted in a tripartite framework - governments, employers and workers - which gives this tool of progress legitimacy unparalleled.

In France, AFNOR Certification has adapted ILO-OSH 2001 in agreement with ILO in order to perform third party assessments, and published an "Evaluation guide for occupational safety and health practitioners and auditors according to ILO-OSH 2001"

Prefaced by ILO, the Guide is intended both for persons responsible for OSH in companies wishing to implement an occupational Safety and health management system and for auditors responsible to conduct the evaluation

Today in France, a thirty companies are certified according to ILO-OSH 2001, and the first having successfully implemented the guiding principles of ILO-OSH 2001 have been witness to the major interest for their organization and performance.

[TS01-04]
From the Theory to Practice: Reflection on the ILO Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)

Nilton Freitas

International Federation of Trade Unions of Chemical, Energy, Mines and General Industries - ICEM, Brazil

From a point of view of the workers and their representatives, the adoption of the ILO Guidelines on Occupational Safety and Health Management Systems, has an important implication in taking actions for the promotion of the highest levels of safety and health of workers. The guidelines make a valuable contribution, as a tool for OSH management system, for the promotion of an integrated approach of policies inside the organizations and the concept of continual improvement working with the environment and the quality policies and others. A special dimension of the ILO Guidelines is that they recognize the roles of the workers' and employers' organizations in the process of developing and applying policies and actions for prevention. In a current context of search for sustainable enterprises – recent resolution of the International Labour Conference – the ILO-OSH 2001 Guidelines should have a priority place in the actions of the International Labour Office, by means of the technical cooperation with the member states. The promotion of ILO OSH management systems approach is important in view of promoting management systems approach as a part of national OSH strategy formulated by tripartite partners, and not as a part of commercial drive of management systems. Thus we should work in the spirit of the Declaration of Philadelphia: Labour is not a Commodity.

[TS01-05]
Employers' Perspective: Management of Health and Safety, an Economic Necessity

Kris de Meester

Federation of Enterprises, Belgium

Management of health and safety, an economic necessity

Nowadays businesses operate in a context of globalization, characterized by the restructuring of economy and politics, a more competitive world economy and increased productivity with restructuring of organizations and management, internationalization of business and business processes. Our world becomes "smaller" (a global village in a "global" world). More goods and services are exchanged, capital and financial flows are on the increase. We witness the rise and diffusion of new technology, the flow of ideas, new production methods and changing job contents including the shift from traditional workplace to homework, mobile office,… innovation is the keyword. There is a geographic shift: the movement and migration of persons, including workers. More and more we have to face and overcome language barriers in training, instruction and communication in general. The role of media is growing, including social media and social networking. And let's not

forget: the pace at which all these changes take place is on the increase.

These trends are reshaping the world of work in a profound way. Businesses not only need to be able to survive, stay profitable, grow in that context. In order to increase their chances in doing so, they have to adapt their processes, services, work environment, work organization, management and social relations and go for excellence in every of those fields. The enormous economic costs of problems associated with health and safety at work inhibits economic growth and affects the competitiveness of businesses throughout the world. Poor OSH conditions are a human burden, an enterprise burden, a societal burden. Managing health and safety in every aspect, implementing a health and safety management system therefore is not just an opportunity but an economic necessity in the long term, even for the smallest businesses.

The ILO's Guidelines on occupational safety and health and management systems provide a guiding light. At an organizational level the guidelines are intended to, "motivate all members of the organization, particularly employers, owners, managerial staff, workers and their representatives, in applying appropriate OSH management principles and methods to continually improve OSH performance."

[TS01-06]
ILO-OSH 2001: Re-introducing OSH Management Systems in the CIS Countries

Roman Litvyakov, Wiking Husberg, Marat Rudakov

ILO Moscow, Grigoriy Faynburg, Perm Regional OSH Centre

Eleven CIS countries (former Soviet Union republics) approved in 2007 the new inter-state standard GOST 12.0.230-2007 identical to the ILO-OSH 2001 "Guidelines for occupational safety and health (OSH) management systems". An old type of OSH management system (MS) was implemented in the planned economy. The division of the Soviet Union and the following transition period towards market economy led to the abolishment of all social responsibility functions in the enterprises, which did not produce immediate profit, including the systematic OSH approach and all OSH functions.

An extremely disturbing negative demographic population decrease, partly due to occupational accidents, diseases and poor working conditions, has lifted the improvement of working conditions higher on the political agenda. Implementation of the new GOST Standard is a starting point towards improving the situation.

The introduction of modern OSH managements systems is a part of the ILO systematic approach. Several CIS countries, such as Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, have included modernisation of their OSH systems in their tripartite Decent Work Country Programmes with ILO.

The GOST Standard is tested in Russian regions and some CIS countries in conjunction with ILO projects. In Karelia and Leningrad region in Russia employers' organisations and pilot enterprise are introducing the new modern OSH MS. The Union of Employers of Armenia has started utilization of the new Standard.

Implementation and audit manuals and guidelines, training packages assessment and social partnership have been produced.

Enterprises, based in the CIS countries, which aspire towards contacts with the global market, are demanding an international OSH certification system. ILO-OSH 2001, being the only international OSH management standard, is the obvious base for such a system.

[TS01-07]
Steps Taken towards the Improvement of Activities Related to ILO-OSH 2001 Adherence in Argentina

Juan Horacio Gonzalez Gaviola

Superintendency of Occupational Risks, Argentina

Argentina, through the Superintendency of Occupational Risks ("Superintendencia de Riesgos del Trabajo"), recognized the ILO-guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001) on 28 April 2005 and thus became the first Latin-American country to formally recognize them.
As a result, cooperation between ILO and Superintendency of Occupational Risks started so as to find the ways to follow up the guidelines. Once this period concluded, and in order to start planned activities, Resolutions 523/07 and 1629/07 were written. Both Resolutions were intended to complement the following aims: to give a national framework as an adjustment process from ILO-guidelines at a national level, to find the ways for the follow-up, and to assure workers'participation. Resolution N° 523 set the emphasis on the adoption of the National Guidelines on

Occupational Safety and Health Management Systems for all the specific guidelines. This Resolution contemplates that the adherence to these rules is voluntary and that it complements the pre-existing regulations, not replacing them. Specific guidelines based on kind and size of the organizations were planned and in order to get to these specific guidelines, three basic steps of actions based on flexibility were taken. Resolution 1629/07 includes the rules and regulations for the implementation of the OSH Management Systems at a national level.
As the National OSH Management System Guidelines are not mandatory, the Regulatory Authority encourages incentives to the companies which send there adherence to them.
Taking into account the national guidelines, a pilot activity was performed by an electricity company (private employer), a workers´ union ("Federación Argentina de Luz y Fuerza- FATLYF") and a state representative (Superintendency of Occupational Risks). Preliminary result will be presented.

Technical Session II
[TS02] Impact of Changing Working Conditions on Workers' Protection

June 30, 13:30 - 15:45
Room: 104/105, COEX

Moderators:
Gerhard Mehrtens, ISSA
Jacques Tonner, ISSA

[TS02-01]
Impact of Changing Working Conditions on Workers' Protection

Jorma Rantanen

International Commission on Occupational Health

Traditional risks, occupational accidents and occupational diseases still continue to occur in both industrialized and developing countries and need full attention for better recognition, registration and first of all prevention. Despite these risks still cause an unreasonable burden to health, work ability and well-being of workers and major economic loss for nations, they remain largely unrecognized.
Simultaneously, several new risks emerge and call for predictive risk assessment and new preventive strategies. New competences among occupational safety and health personnel are needed. Recognition and prevention of new types of accidents, musculoskeletal disorders, psychosocial stress and new types of social behaviour need to be strengthened. Numerous challenges but also opportunities are provided by new technologies.
The clients of occupational health safety are in a dynamic structural change. The big global operators take good care of their workers' health, while the small-scale enterprises, micro-enterprises and self-employed are seriously underserved. The developing world is for 85% to 90% uncovered by any safety and health services. Putting current knowledge and research on safety and health into practice for protection of all working people is a challenge of occupational health safety and health in the next decade. WHO, ILO and ICOH have jointly launched a new strategy for Basic Occupational Health Services, BOHS, to give a response to such a major global health challenges. The BOHS approach is currently introduced and implemented in all continents. The ultimate objective of the new strategies of ILO, WHO and ICOH is to provide a certain minimum level of services for each working individual in the world. Similar set of basic safety services would be needed and preferably both basic safety and health services should be provided together.

[TS02-02]
Changes in the World of Work

Richard Delmas

National Health Insurance Fund for Salaried Employees (CNAMTS), France

10 years ago, while traditional risks seemed to be progressively mastered in Europe thanks to a more comprehensive regulation the current change in the economic activities represents a new challenge. Traditional risks are growing in new circumstances and new additional risks are emerging in addition to them.

We will probably notice soon the results and conclusions of the works engaged some years ago. These reports are in accordance with the current evolutions: globalization of the markets, continuous search for competitiveness, deeply changes in the traditional work structures and increasing use of new technologies.

The collective work body is splitting and become atomized. Work itself becomes more and more insecure. Different opinions agree however on one of this many-sided evolution: the impact of the growing number of working women and the global ageing of the working population.

Another important new fact is that media and public opinion have a great interest in this matter. The topic of occupational health and safety has become a current subject that is not limited to the enterprise any more. This interest has as a consequence the lost of confidence of the general public and its concern regarding risks. Occupational risks appear like something of the past that is not accepted any more by the public opinion. The notion of quality and well-being at work takes all its sense and combines itself with the notion of quantity of work.

The need of research, wakefulness, permanent and reactive observations of the evolutions that are harmful to occupational health becomes obvious. We need appropriate tools allowing us to constantly manage change, to determine reactive performing indicators to follow-up occupational health and safety, to adapt mentalities to this perpetual evolution and to expect to find the unattended in control fields that were unexplored before.

A great watchfulness is also necessary because of the lack of experience regarding the introduction of new products or new technologies and their long-term effects.

[TS02-03]
Migration and Safety and Health at Work: Migrant Construction Workers in the US

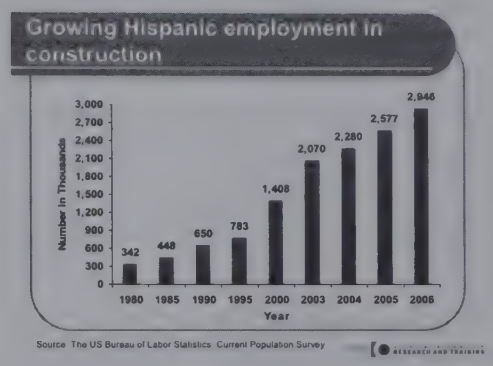
Knut Ringen, Sue Dong, Pete Stafford

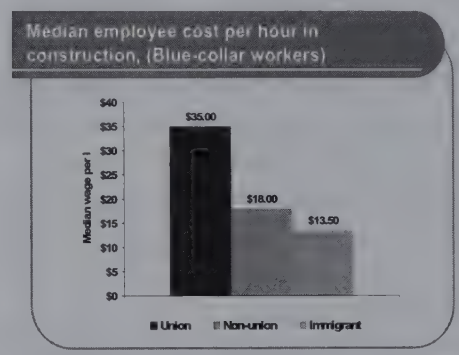
Center for Construction Research and Training, United States

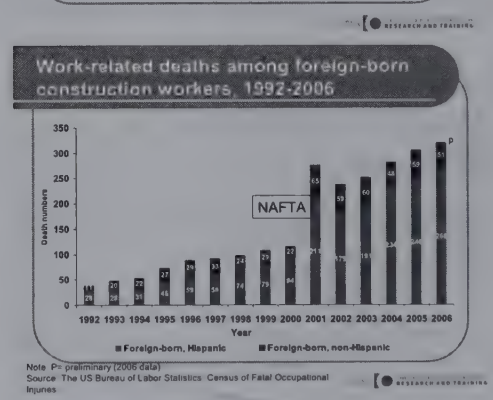
The construction industry has always been characterized by great mobility of employers and workers, given the temporary nature of construction projects and construction work. However, increasing globalization of the economy and the expansion of free trade agreements in recent years are having a severe effect on workers and the stability of the construction industry, and is threatening to set back both safety and health and the social security arrangements that have been created for construction employment.

In the mid-1990s, the US entered into the North American Free Trade Agreement (NAFTA) with Canada and Mexico. While this agreement did not include free movement of labor across borders, it did result in displacement of labor that unleashed a vast illegal migration of workers from Latin America (mainly Mexico) into the US. While for these workers this represented a good opportunity, it had consequences, in the form of lowering wage and benefit levels and increasing injuries and fatalities.

While globalization will continue to be a reality, we believe this is an issue that ISSA should address. Specifically, we think ISSA should insist that safeguards of labor standards be incorporated in international economic agreements, by insisting that nothing in such agreements should lead to a deterioration of prevailing labor standards, including safety and health protections, occupational health services and social security arrangements.







[TS02-04]
Occupational Safety and Health Concerns in the Informal Economy

Sanjiv Pandita

Asia Monitor Resource Centre, Hong Kong SAR, China

Informal sector workers and workers working informally continue to be one of the most vulnerable groups in terms of exposure to workplace hazards, access to social security (including compensation) and other basic rights. Definitions may vary, but there is an agreement on the scale and magnitude of this sector and in many (developing)

countries, this is the largest sector in terms of employment and overall output, yet the workers in this sector are outside the per view of any protective or regulatory legislation, a majority of times. Many a times hazardous work is deliberately outsourced to this sector so as to reduce the costs on safety. Informal sector also poses a challenge in terms of improving OSH conditions, as it is not a priority of the workers. Having a job is more important than the quality of job. However, working in such conditions can cause work related accident or disease and if it affects the sole bread earner, it can push their family into deeper poverty. Women and children also work in this sector as there is, sometimes, no clear distinction between the workplace and home.To address this problem, we need to develop different strategies depending on the context. However, the major problem arises due to lack of clarity in terms of employment relations and thus the key question who pays? Given the importance of this sector in the economies, one may explore different options of empowerment of workers and victims, contributory insurance scheme subsidised by the government or making the big businesses to contribute when the product supply chain can be traced down to these informal workers. New ways of organising also need to be explored and it needs a partnership of Trade Unions, Labour groups and the Environmental Groups to tackle this overwhelming issue.

[TS02-05]
Changing and Poorly Cared Working Conditions and Their Impact on Health and Safety of Construction Workers in Japan

Eiji Shibata[1], Hitoshi Kubota[2], Ippei Mori[2], Michihiro Kamijima[3], Jian Sun[4], Naomi Hisanaga[5]

Aichi Medical University[1], National Institute of Occupational Safety and Health[2], Nagoya Postgraduate School of Medicine[3], Aichi University of Education[5], Japan
Institute of Health Economics, Edmonton[4], Canada

Recently, newly developed materials and techniques are introduced in construction, and construction workers are exposed to those new hazards. Therefore, much attention should be paid to the health and safety of construction workers. But like most countries in the world, small scale enterprises (SSE) are playing substantial roles in construction industry in Japan.
The aim of the present report was to demonstrate some aspects of the health and safety of construction workers in Japan through our research activities and to provide suggestions about health effects of the development of technology on the health and safety of the workers.
On the basis of the membership of Construction Workers' Health Insurance Society of Mie Prefecture (CHISM) in Japan, standardized mortality ratios (SMRs) were calculated during the period of 1973-1993. And in order to demonstrate the past and current exposure to various risk factors in construction, we also conducted a questionnaire survey of the workers on an occasion for the annual health examination carried out by CHISM.
Cancers of trachea, bronchus and lung was tend to be high, though not significant. SMR of lung cancer of ironworkers was 2.88 (95% CI: 1.44-5.15), suggesting the health effect of spraying of amphibole asbestos.
The questionnaire survey demonstrated the construction workers are exposed to dusts including asbestos in the past. Significant association between use of noise-making tools and subjective hearing impairment was found.
Through the experience in CHISM, the importance of organization to carry out the activities for occupational safety and health of SSE or self-employed workers should be recognized. To strengthen organizations, persons with various specialties should collaborate with common consciousness.
We should take care of occupational safety and health of construction workers continuously to improve working condition of them and check the health effects of the past exposure to harmful materials including asbestos.

[TS02-06]
Inter-country Networking of Participatory Training in Occupational Safety and Health by Trade Union Initiative in Changing Working Conditions

Toru Yoshikawa[1], Kazutaka Kogi[1], Koji Suzuki[2]

Institute for Science of Labour[1], Japan International Labour Foundation (JILAF)[2], Japan

The safety of work varies enormously between countries, economic sectors and social group. Developing practical risk assessment tools and its implementation programs for securing workers protections in changing working conditions is needed. The participatory, action-oriented training program in occupational safety and health named POSITIVE (Participation-Oriented Safety Improvements by Trade Union InitiatiVE) was developed through trade union network in Asia under the cooperation of Japan International Labour Foundation (JILAF). This program established in Pakistan and extended to other countries in Asia. The steps taken in the development of the POSITIVE program included collecting local good examples in safety and health, developing an action-checklist, testing a participatory training program, and conducting follow-up activities to examine local achievements. Training

manuals were compiled to provide workers with the practical, easy-to-understand information on safety and health improvements and on the positive roles of trade unions. Trade union trainers trained in the methodology conducted serial POSITIVE training workshops in Pakistan and then in Bangladesh, Mongolia, Nepal, the Philippines, Thailand, China Indonesia, Vietnam and Laos. These workshops resulted in many low-cost improvements at the workplace level. These improvements were carried out in the technical areas of materials handling, workstations, machine safety, physical environment, and welfare facilities. The trade union networks have been vital in reaching an increasing number of grass-root workplaces and in expanding the program to other countries. This included the visits to Mongolia and Thailand of Pakistani trade union trainers to demonstrate the POSITIVE training. The participatory training tools used in the POSITIVE program such as the action checklist and group discussion methods were commonly applied in different local situations. Participatory approaches adopted in the POSITIVE program have proven useful for providing practical problem-solving measures based on the local trade union initiative in changing working conditions in workplace world wide. More information; web site:
http://www.jilaf.or.jp/English-jilaf/index.html

Technical Session III

[TS03] New Challenges and Opportunities in Occupational Safety and Health (I)

June 30, 13:30 - 15:45
Room: 103, COEX

Moderators:
Doo-Yong Park, Occupational Safety and Health Research Institute, KOSHA
Antonio Moccaldi, National Institute for Occupational Safety and Prevention (ISPESL), Italy

[TS03-01]
From Sharing of New Technologies through Health and Safety Networking to Using New Technologies for Health and Safety Networking

Jukka Takala, Sabine Sommer, Andrew Smith

European Agency for Safety and Health at Work, Spain

Occupational safety and health issues (OSH) are complex and diverse. Dealing with them effectively and equitably is more than individual persons, organisations or countries can manage alone.
This is where OSH networks and networking can make a difference. Networks are powerful tools for raising awareness and sharing information and good practices on OSH issues.

By pooling resources and uniting voices where and whenever relevant networks have a greater impact in the development of a culture of risk prevention as one single actor alone.
Over the time, many OSH networks have developed, ranging from regional networks over specialist and topical networks to virtual networks of cross-linked websites.
There are many achievements – tangible, e.g. reports, conferences and intangible, e.g. contribution to a better understanding of different cultural backgrounds and OSH settings

However, the figures for work-related diseases and accidents are still high, and today there are many changes in the workplaces as well as in the way we can communicate which each other, particularly the younger generation.
Can we meet these challenges with the current networks and networking methods and what could OSH networks to more and better to address these new challenges?

After providing a short overview of OSH networks and networking on OSH today, in his presentation Dr Takala will highlight present and future challenges in OSH and discuss what possibilities new communication tools, such as web 2.0 social media can offer for sharing OSH information and reaching out to a large audience.

[TS03-02]
Safety and Health Challenges and Improvement Opportunities in Asian Region

S. Veerasingam

Asia Pacific Occupatioanal Safety and Health Organization, Malaysia

Safety and Health Challenges and Improvement Opportunities in Asian region
The Asian region consist mostly of third world and developing countries, where productivity is the first priority and safety and health is implemented only if cheap or convenient. As a result, accident and severity rates are way below acceptable "international" standards. This trend is

made worse by attitude of industries that third world countries are sources of cheap labor, where companies are free to squeeze maximum profits at the expense of the working population.

OSH improvements can and should be spearheaded by multinational corporations, non-governmental organizations, regional committees, and even the United Nations and the International Labor Organization. While raking in profits by the billions, there is a corporate social responsibility to help raise the standard of living of the working population, if not at least the standard of safety and health. Safety and health is not free, but it does not cost much either. All you need is a team of committed people, the time to carry out safety activities, some basic resources, and the knowledge and skill to carry out safety and health programs.

MNCs can play a big part in improving safety and health in this region. Some of the programs that can be implemented by MNCs are

- Setting high standards of safety and health in their branch countries; they should not follow the country's minimum standards, but be a benchmarked with leading MNC's and to be followed.
- Mentor-mentee program where MNCs can adopt and help mentor a few SMIs of their choice
- Sponsoring "OSH in Schools" to help raise awareness in students before they enter the job market.

Regional committees such as ASEAN OSHNET can help through promotion of Country OSH Policy and follow up by guiding its implementation. There can also be annual or biennial conferences where participating countries take turns to host. Current safety and health issues can be discussed, to be followed by benchmarking and revision of legal requirements and standards.

To do all these, we need a champion. We need funds, international expertise, and a force to drive this program. How can we start? Are regional countries willing to be part of this program? Can we start at all? As Dylan says, the answer is blowing in the wind.

[TS03-03]
New Challenges in Occupational Health: "Securing Workers' Health Rights by the Strengthening Food Safety through Proper Diet"

Han-Og Sur

KOSHA, Korea

In Korea, compared to 2006, the number of accidental casualty increased by 1.3%(1000), while the number of occupational disease as 12.1%(1234), showing an increase. According to National health and nutrition examination survey in 2005, the risk of stroke in adults suffering from chronic diseases is 2-5 times higher than not adults. The most serious thing is that the workers, more than half of adults in Korea, are cerebro-cardiovascular disease high risk group and 3/4 workers of those does not have the proper management. Industrial Accident Insurance payment for cerebrovascular disease and heart disease is occupied 8-9% of total, which are holding a position as a burden on industry. These are closely related to lifestyle such as eating, smoking, exercise. so it is called as lifestyle related diseases.

KOSHA in the last year, published "self control health" is a small booklet. It suggests appropriate life style such as proper diet, healthy food, how to exercise in workplace.

I think the best effective strategy to prevent occupational disease is to adjust worker's life style. Among those, the most important thing is eating. Traditionally it is said in Korea that food and drug come from same root. That means any illness occurs in food, so food treat illness. Therefore, we should secure worker's heathy rights by the strengthening food safety through proper diet in work place.

[TS03-04]
Green with Envy: What Safety and Health Managers Can Learn from the Corporate Environmental Movement

Leo Carey

National Safety Council, United States

Starting in the 1990s, corporations around the world began developing Corporate Social Responsibility (CSR) codes. These CSRs are generally composed of several parts which may include: environmental performance, labor rights, health and safety practices, human rights, community economic development and supply chain management. Although occupational health and safety has gained attention in the last decade, the majority of attention by far has been given to the environmental aspect of these codes. Safety and health managers concerned with global health and safety practices within supply chain management can learn from the strides made in environmental sustainability at companies. Worker safety and health has as many potential benefits as corporate environmental responsibility, but that message has not yet researched consumers. What can those striving to improve worker safety both within their own company and within their global supply chains learn from the corporate environmental movement? First, poor working conditions in Asia, India and the United States can create a backlash.

Second, improvements in safety and health—both within the parent company and within supply chains—help the company bottom line. Each year the Robert W. Campbell Award is given to companies that demonstrate how their safety and health programs have improved profits. Leaders in these companies have made the connection between safety in their operations and corporate sustainability. Third, audits and objective metrics and measures can help. Finally safety and health professionals can follow the lead of their counterparts in environmental affairs and make a convincing business case for the connection between an outstanding occupational safety and health records and a successful business.

[TS03-05]
The Forest for the Trees: A System Approach to Occupational Safety and Health

Harri Vainio

Finnish Institute of Occupational Health, Finland

I explore the relationship between current research directions in occupational safety and health and occupational health policy. Specifically, I suggest that continued emphasis on 'old' traditional approaches to the exclusion of other 'new' approaches will impede the discovery of important breakthroughs in health and safety research necessary to understand the emerging hazards of today. I recommend redirecting research programmes to interdisciplinary and population-focused research that would support a systems approach to fully identifying the occupational factors that contribute to negative health and safety outcomes. Such an approach is able to address the interactions between psychosocial, cultural, and physical aspects of our work environment and explicitly include these in the evaluation and management of health risks from occupational sources.

[TS03-06]
New Strategies for Product Certification Impacting Occupational Safety and Health

Keith Williams

Underwriters Laboratories, United States

It is both a challenging and opportune time for individuals responsible for product safety. Consumers, retailers, workers, and regulators are focused on product safety issues today, largely because of recent high-profile incidents with consumer products, but also because of on-the-job catastrophes in mines and other work environments. It is a natural evolution for societies to seek improvements in the quality and safety of the environments where they work and live. Today, we are expanding the traditional definition of safety hazards (fire, shock, and casualty) to encompass concerns about the impact manufactured products have on the environment. We are also coping with shifts in global supply chains that impact the types of materials human beings are exposed to, and the safety and quality of the products they use. Standards development organizations and testing and certification bodies are continually striving to keep pace with new developments, in order to design compliance solutions that meet the confidence of the marketplace and regulators in ways that do not overly restrict the flow of commerce. Developing a global safety consciousness and harmonizing standards and conformity assessment systems internationally are the keys to unlocking current product safety challenges. When countries have common understandings of the risks inherent in products and purposefully use standards, testing and certification schemes as tools to improve the quality and safety of products, rather than protectionist barriers to trade, human environments are positively impacted and dramatically improved.

[TS03-07]
New Education and Training for Occupational Safety and Health

Jin Geol Kim

KOSHA, Korea

There have been many changes in modern industrial training environment e.g. limitation of school education caused by rapidly changing society, shortening of knowledge lifespan and Extension of Average Human Life Span and Social Change Intervals. In addition, it is needed for us to take lifelong learning of which several method of education including credit bank system can be used.

Category	Industrial Society	IT Society	Ubiquitous Society
Target	School constituency oriented	Extended to industry workers	Unlimited
Method	Collective learning	Field studies	Individual/customized
Medium	Classroom (blackboard, books)	Broadcasting media, computer	Internet/BcN/USN etc.
Time	Weekdays	Weekdays/evenings	Unlimited
Location	School	School/industry site	Unlimited

Since Internet communications training commenced in the form of E-Learning had been introduced, several methods were developed like Official Cyber University, EBS SAT

Internet Broadcasting and the amount of e-learning market have been expanded enormously. Reflecting this trend, KOSHA also adopted E-learning for occupational safety using credit or point system so that 9,714 workers have attended since 2001.

Amongst the attendees, about 80% satisfied in the education effectiveness. On the basis of the result acquired by e-learning for many years, KOSHA plans to innovate it by combination and standardization of education contents, which is called Sharable Content Object Reference Model. KOSHA also plan to adopt the U-learning system, which means "Ubiquitous".

In future education, the offline format of education that takes place in real-world educational facilities will be limited. It is anticipated that theoretical studies and hands-on exercises will be done in a 3D space where reality is integrated into a virtual environment, evolving in such a way that lifelong learning that transcends time and space is made possible.
Educational institutions will need to create environments appropriate for this and actively prepare to meet the rapidly evolving education paradigm.

Symposia

Symposia

[SY01] OSH and the Informal Economy: New Avenues

June 30, 16:00~18:30
Room: 101/102, COEX

Chairperson: **Chantana Padungtod,**
Ministry of Public Health, Thailand
Moderator: **Michèle Nahmias**, ILO

[SY01-01]
Participatory Safety Improvement Actions in Agriculture Sector: Experience of Bangladesh in Rice Mills

Aminur Chowdhuy

Bangladesh Occupational Safety,Health and Enveronment Foundation (OSHE), Bangladesh

Agriculture is the main economic sector in Bangladesh and major contributor in employment market. Rice mill the industry plays an important role in local food market. Approximately 40,000 rice mills (micro industry) in the country which have almost 5 millions of workers. The rice mill is considered as micro enterprise, highly female workers intensive, uncovered by labour law and labour inspection system.

The workers in rice mill work under severe shining sun. Lung and stomach problem, asthma, diarrhea, decently are common diseases . The types of accident on the rice mills are like boiler blast; turning the ribbon of haler machine; cutting off fingers by machine; fracture of hand or leg; neck pain due to carrying sacks full of paddy or rice. It was estimated that apx. 1000 workers killed and around 5000 critically injured in last ten years due to boiler blast and other type of work place accident.

The OSHE Foundation with the support of Toyota Foundation (Japan) has been implementing a grass-root OSH action project titled as GRAIN in Bangladesh [Glocal (Globalised localism) Relationship of Agricultural Improvements in Bangladesh].

The following project has chosen in said particular geographical area with the specific objective to improve working condition in rice mills by low cost participatory safety improvements

Actions. Indicators of Achievements of the GRAIN Project: A core GRAIN Trainers at workplace level; An innovative checklist for improvement of working conditions: a new action manual; 400 sensitized workers (male: 210, Female: 190) with enabling then to work for low cost actions at workplaces; Establishment of a new local network etc.

Key Lesson learned: Participatory OSH improvement actions contribute towards improvement of social dialogue, low cost health and safety actions and bi-lateral cooperation between employers on workplace issues and help to advancing the 'Decent Work' agendas at workplaces.

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[SY01-02]
Occupational Health Services for Handicraft Workers in Thailand: A Multi-Sector Collaboration

Chantana Padungtod[1], Nuchnart Nakkham[2], Orapin Wimolphusit[3]

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Handicraft products are among the major exports of Thailand. Under a government project "One Tambon One Product" (OTOP), approximately 60,000 handicraft workers were registered in 2006. Meanwhile, the 2006 Informal Employed Survey by National Statistical Office revealed that 21.8 millions Thai workers were in informal sector (62%). Among them, 1.8 millions were listed as handicraft workers. These workers work at home and are exposed to several health hazards. In 2006, 0.3 millions handicraft makers, reported of having work-related illnesses. These workers are not covered neither by Workmen Compensation Fund nor Social Security System. However, health stations, located in sub-district and funded by National Health Insurance Scheme, can provide appropriate and cost-effective occupational health service. **Methods** During the year 2004 – 2007, Thai Homenet, a non-governmental organization for informal workers, and Bureau of Occupational and Environmental Disease jointly organized a pilot project to encourage local health stations to provide such service. Using Thai Homenet database, 29 health stations were invited to participate in the project. Staffs were trained to assess occupational health risks, to

communicate those risks and to provide low cost and feasible risk reducing solutions to the handicraft workers. Technical consultants, from local universities, provincial or regional health offices, were also invited to participate in the project. In addition, regular monitoring visits were made to these health stations. **Results** At the end of the three-year period, participants were capable of identifying health hazards for handicraft workers in their catchment areas. Five health stations provided practical suggestions for work station and working environment improvements. More importantly, they were able to convince local administration offices to allocate resources for this particular service. At national level, basic occupational health service has been covered, since 2007, as "area-based health risk reduction" under the National Health Insurance Scheme.

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[SY01-03]
OSH Problems of Informal Workers in Asia

Sanjiv Pandita

Asia Monitor Resource Centre, Hong Kong SAR, China

Informal sector workers and workers working informally continue to be one of the most vulnerable groups in terms of exposure to workplace hazards, access to social security (including compensation) and other basic rights. Defining the informal sector has always been a challenging job, and many definitions and terms have been quoted over the years to define so called 'indefinable sector' that may consist of a rikshaw puller in Dhaka, an agate stone worker in Baroda, Gujarat or a worker trying to recycle the toxic electronic waste in Guiyu, China. Definitions may vary, but there is an agreement on the scale and magnitude of this sector and in many (developing) Asian countries, this is the largest sector in terms of employment, yet the workers in this sector are outside the per view of any protective or regulatory legislation, a majority of times. Workers working in this sector are often at an increased threat to OSH hazards due to lack of any regulations and monitoring. Also, many a time hazardous work is deliberately outsourced to this sector so as to reduce the costs on safety. Informal sector also poses a challenge in terms of improving OSH conditions, as it is not a priority of the workers. Solutions to this complex problem are not simple and need paradigm shift in thinking and approach. The OSH issues have to be seen in integration with the other developmental issues in each region if a suatsinable solution to this problem has to be sought. Finally this paper looks into an unlikely collaboration between the informal workers in Guangzhou, China and Gujarat, India, both places engaged in polising of the gemstones and facing the threat of silicosis. The paper examines the whole process of coopration and future direction.

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[SY01-04]
Trends on OSH to Promote Decent Work in the Informal Economy: From an Integrated Perspective in Latin America

Valentina Forastieri

International Labour Organization, Costa Rica

In Latin America the informal economy is essentially perceived as a urban phenomenon. According to ILO estimates the urban informal economy concerns some 75 per cent of workers and contributes to approximately 40 per cent of the region's gross domestic product (GDP). Data on the rural informal economy and agriculture are not available, although they would increase estimates substantially if included.

Decent work deficits in the informal economy should be addressed as to facilitate the integration in the mainstream economy, governments have a primary role to play; employers and workers' organizations can play an important advocacy role. The ILO´s 16th American regional meeting in 2006, gave a central focus to decent work in the informal economy and became a key policy target in the ILO´s Hemispheric Agenda 2006-2015 for the Americas adopted by the tripartite constituents.
The ILO and its constituents are seeking new approaches, innovative solutions and practical responses that can effectively expand the decent work agenda to the informal economy, contribute to poverty reduction, increase income and improve working and living prospects of those found in the urban and rural informal economy. Strategies to address these issues from an occupational safety and health integrated perspective are described. Initiatives have been undertaken both in rural and urban settings, taking into account the different dimensions of working conditions of small scale farmers and workers in micro-enteprises. Some examples are hazards identification and promotion of good practices in micro-enterprises, development of community-based, cluster- based initiatives to improve working conditions and environments including: information and training, OSH committees, first aids, integration of primary health care, occupational health

and health promotion approaches, partnerships and referral to public health care facilities, NGO´s and community centres.

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[SY01-05]
Central Asia: Decent Work in Informal Rural Sector

Wiking Husberg

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Thousands of small farmers and remaining families of migrants are working together for better life and safer work in informal rural economy in ILO projects in Kyrgyzstan, Tajikistan and Uzbekistan. The WIND programmes, backed by trade unions, farmers associations, labour inspection and local administration, are reviving social dialogue and tripartism to improve life and work.
The projects are actively promoted by Ministries of Labour and Agriculture, agro-complex trade unions, agricultural employers, women rural NGOs and local administration "Aiyl-Okmotys". Trainers all over Kyrgyzstan are helping farmers to put the WIND training manual into practice in local seminars. The second wave of training is focusing on agrochemicals and diseases from animals.

The political impact is seen in the national occupational safety and health (OSH) programme for agriculture approved by the Government of Kyrgyzstan in February 2007. A new rural employers' association, tri-partism on regional level and inclusion of veterinary and agrichemical services as trainers are additional benefits.

The Tajik Farmers' Association, advised by the Kyrgyz agro-trade union, focus on the livelihood of women and children, left by men seeking work as migrants. The Talvidara valley has now a beekeepers' centre, providing vocational and WIND training, equipment and veterinary services. Microcredit support has kick-started beekeeping among women heads of families, the annual yield around 150 kg.

Uzbekistan is combining the WIND concept with the modernisation of the national OSH system based on workers' safety representatives. Thus, OSH and WIND are used to build cooperation, social dialogue and increase democracy.

The full impact of improved living and working conditions, increased dialogue and a sense that somebody is caring about the men and women on small farms in the rural informal economy cannot yet be assessed. The programmes can also be expected to have a conciliatory influence on the social situation in these countries.

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[SY01-06]
Pilot Project on Car Repair Shops in Senegal

Birame Faye
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[SY01-07]
Extending OSH Protection to Informal Economy Workplaces in Cambodia

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Introduction: Cambodia places a high priority on improving safety, health and working conditions of informal economy workplaces. Home workers, many of whom are women, are typical informal economy workers who receive little safety and health protection. The Ministry of Labour and Vocational Training of Cambodia, in cooperation with the ILO, has assisted home workers in improving working conditions and productivity by using participatory training methodologies. Methods: The following steps were taken to train home workers: (1) to build collaborative networks with the government agencies, workers' and employers' organizations and NGOs; (2) to visit home workplaces and collect good examples in safety and health; and (3) to develop a participatory training programme for home workers by adapting ILO's WISE (Work Improvements in Small Enterprises) programme, and (4) to train representatives of the government, workers, employers and NGOs as safety and health trainers to support home workers. Results: A participatory training programme for home workers named WISH (Work Improvements for Safe Home) was developed learning from the WISE programme. The WISH programme consisted of a 30-item action-checklist, good example illustrations and texts explaining practical, low-cost improvement measures. The trained safety and health trainers visited and trained many home workers by using the WISH training manual. The trainers, after conducting the initial WISH training, made follow-up

visits to the trained home workers for sustained improvement actions. The Ministry carried out achievement workshops for the trainers and trained home workers to exchange experiences. Discussions: The trained Cambodia trainers reached many home workers through their own networks. Participatory training methodologies focusing on good practice approaches and low-cost improvement measures were useful for supporting home workers' improvement actions. The WISH programme is planned to be incorporated into the national OSH programme of Cambodia and will be increasingly applied as a practical measure to assist home workers.

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[SY02] Asbestos – A Global Disaster

June 30, 16:00~18:30
Room: 203, COEX

Chairperson and Moderator: **Klaus Bartels, ISSA**

[SY02-01]
Asbestos Related Disorders: Medical Aspects

Marcel Jost

Suva, Switzerland

Occupational, paraoccupational and environmental exposure to asbestos is a cause of malignant and nonmalignant respiratory diseases. Respiratory disorders induced by inhalation of asbestos fibres are malignant mesothelioma, bronchial carcinoma, asbestosis as well as pleural plaques, pleural effusions, diffuse pleural thickening and rounded atelectasis.
Pleural plaques are a common manifestation of asbestos exposure. Plaques are not a precancerous lesion, but are markers for previous asbestos exposure and hence for elevated risk of malignant tumours. Pleural effusions occur usually with a latency period of many years. A special form of pleural involvement due to asbestos is rounded atelectasis.
Asbestosis is a diffuse interstitial fibrosis caused by asbestos fibres.
Malignant mesothelioma is a tumor of serosal surfaces (pleura, peritoneum, pericardium). The latency period is usually 20-50 years. The number of patients with mesothelioma due to asbestos exposure is still rising in many countries.
Asbestos related lung cancer shows in the majority of investigations the same proportion of peripheral versus central cancers and upper versus lower lobe distribution as lung cancer not related to asbestos exposure. Smoking and asbestos have a synergistic action (supraadditive effect).
Excess risk of lung cancer and mesothelioma varies with the cumulative asbestos exposure (expressed as fibre-years) and fibre type. Several studies and metaanalyses indicate a linear relationship without a threshold.

Five controlled randomised trials evaluating low dose computed tomography as a screening tool are ongoing or planned. Large scale lung cancer screening is not recommended until results of these controlled randomised trials support a benefit from annual screening by low dose computed tomography.
Potential markers in mesothelioma diagnosis are osteopontin, soluble mesothelin-related protein (SMRP), CA 125 and CA 15-3. Sensitivity and specifity of osteopontin and SMRP levels are acceptable; the low predictive value of these tests however would lead to a high number of false positive tests.

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[SY02-02]
Former Use of Asbestos and Development of Asbestos Related Diseases in Germany

Markus Mattenklott

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Asbestos consumption in Germany started at the end of the 19th century. After the depression of World War II a rapid increase of asbestos use (mainly Chrysotile) took place and reached a level of about 220.000 tons per year in the 1970s. About 70% of this amount was used for asbestos cement products. Beginning with the prohibition of sprayed asbestos in 1978 step by step more products were interdicted with a total ban of asbestos products in the year 1993. The limit values for asbestos exposure, starting with 2 f/cm^3 each for chrysotile and amphibole asbestos in 1976, were lowered in steps to 0,25 f/cm^3 for asbestos in total in 1990. This limit value was replaced by an interdiction of exposure in 1995. Substitution of asbestos started in the late 1970s and was achieved for all important applications

at about 1992. Severe safeguards protect the workers that remove asbestos containing.
Cases of asbestosis and lung cancer were accepted and compensated as occupational diseases since 1936 and 1943, mesothelioma are admitted as asbestos related occupational disease since 1976. The number of new approved cases for lung cancer (816 in 2006) and asbestosis (1969 in 2006) is on a stable high level after a significant rise since the 1970s. The number of new cases of mesothelioma is still increasing (903 in 2006). The average latency period between main asbestos exposure and the outbreak of the disease is about 38 years. So far more than 50.000 cases of asbestos related diseases have been recognised in Germany. From 1987 up to 2006 total costs of 3.6 billion Euros for compensation and rehabilitation were caused (costs in 2006: 371 million Euros). Supposing the maximum number of new cases per year in 2010, a total amount of about 120.000 asbestos related diseases can be estimated.

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[SY02-03]
Asbestos Related Diseases - Legal and Economic Effects

Michal Mekota

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Over the past 20 to 30 years asbestos compensation payments have exerted a considerable economic and financial strain on many industrial countries. Particularly in the United States and the United Kingdom, asbestos-related litigation and ensuing damage awards have forced numerous companies into bankruptcy resulting in thousands of individuals to lose their employment. Germany, as well, has experienced a large influx of asbestos-related diseases in the worker`s compensation arena. The main purpose of this presentation is to illustrate how asbestos litigation as affected the US, UK and Germany both from a legal and economic standpoint.

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[SY02-04]
Prospects of the Global Chrysotile Ban

Dmitry Selyanin

The International Allience of the Trade Union Organizations, Russian Federation

The International Allience of Trade Union Organizations "Chrysotile" is deeply concerned about the problem of possible prospects under global ban on chrysotile; those social, medical, economic and political consequences which had appeared in the countries, that had already banned chrysotile, and those countries which are going to do it in the future.

It is evident that it is impossible just simply copy the experience of the EU countries and to project it to the developing countries. Serious scientific studies are necessary in social, economic, medical spheres in order to: on the one hand clearly see social economic consequences of possible global chrysotile ban for developing countries and on the other hand to be absolutely sure that suggested artificial chemical substitutes will never bring much more hazard for people's health and possess all useful technological qualities and properties which chrysotile possesses.

Panic in EU countries about asbestos is a subject of special concern. The reason for this panic is that dangerous properties of amphibole asbestos group have been projected on chrysotile. That panic is based on a fundamental scientific confusion which has cost businesses, homeowners, insurance companies and other companies truly astronomic sums.

Scientists in many countries today due to the latest serious scientific studies came to the mutual consensus about different level of influence to people's health of chrysotile and amphibole asbestos group. As a result WHO in its official paper, which was adopted at the 60th World Health Assembly in May 2007 "The global plan of action on workers' health 2008-2017" reflected the differentiated approach to regulating chrysotile and amphibole asbestos group.

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[SY02-05]
Rising Indian Asbestos Consumption- A Cause for Concern

Tushar Joshi

Centre for Occupational and Environmental Health (COEH), India

Introduction

The World Health Organization (WHO) estimates that South East Asian Countries and their growing economies now have the largest number of workers exposed to Chrysotile asbestos directly. The asbestos is the most important occupational carcinogen, causing 54% of all deaths from occupational cancers.

Consumption

According to the Indian Asbestos Cement Products Manufactures Association (ACPMA), they only use Chrysotile for the manufacture of asbestos-cement sheets and pipes which contain Chrysotile fibre (8 –10%), cement 55%; fly ash 30 –35%, and wood pulp. The association incorrectly argues that asbestos fibres are firmly locked-in the cement matrix during manufacture and cannot be emitted into the atmosphere under normal use. Thus, no health risk to the general public or environment is created. According to ACPMA, India in 2003, produced 19000 metric tones, imported another 165424 tones, and exported only 2548 tones of asbestos products, meaning that significant exposures occur in India to the construction workers who lay down asbestos cement sheets and pipes.

Exposure and Outcomes

The National Institute of Occupational Health (NIOH) studying four cement plants recorded prevalence of asbestosis that varied from 3% to 5%. The asbestos fibre levels were higher than the permissible level of 2 fibres/ml in two factories, and in asbestos textile industry levels varied from 216 to 418 fibres/ml. The prevalence of asbestosis was 9%.

Conclusion

The ACPMA erroneously argues that asbestos related illness in past resulted from uncontrolled conditions, and in well controlled plants diseases should not occur. The asbestos related illness are likely to inundate the health care establishments in future. The paper discusses Indian Asbestos situation today, a matter of concern to us all.

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[SY02-06]
The Study for Health Hazard Evaluation in Asbestos -Processing Industries in Thailand

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The study project was conducted by the National Institute for the Improvement of Working Conditions and Environment (NICE) in 1999 through 2001. The objective is to determine average asbestos concentration levels in various processes comparing to the standards as well as to identify existing Occupational Safety and Health (OSH) issues which were problematic in such industries The outcomes from this study will be uses as guideline for further OSH plan and activities.

The survey and environment assessment were conducted in 11 industries of various processes. These processes were categorized into 4 groups which are ;brake pad, clutch, roof-tile,cement duct and other products All involved in the use of asbestos in friable form . Air samplings were carried out at the workers exposed to asbestos . The measurement samples were totally 107.The laboratory analysis of environmental samples was run using the computerized asbestos analytical system (equipped with a phase-contrast microscope and software for asbestos counting and sizing).

The results from this study, the airborne asbestos concentrations ranged from 0.01 to 43.31 fibers/cc. (average of 5.45 fibers/cc.). Of these measurements, 39 samples (36.45%) exceeded the permissible exposure limit (5fibers/cc.)issued under the Thai OSH laws. Referring to the Threshold Limit Value (0.1 fiber/cc.) established by ACGIH 103 samples (96.26%) exceeded this recommended standard. The mean concentrations of asbestos in brake industries, clutch industries, and cement products industries, were 6.93, 1.45, and 0.81 fiber/cc.,respectively.The comparative results of asbestos concentration measurement are also described work process.The highest concentrations were taking from asbestos-mixing process,especially in brake industries. We concluded that a significant numbers of thai workers in asbestos processing industries were working in hazardous conditions with inadequate protective equipment,and closer monitoring of these industries was necessary.

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[SY02-07]
The Carcinogenicity of Asbestos - Evaluations by IARC and WHO, Recent Developments and Global Burden of Asbestos-Related Cancer

Kurt Straif

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Asbestos (actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite) has been classified by the International Agency for Research on Cancer (1987) as being carcinogenic to humans. Exposure to chrysotile, amosite and anthophyllite asbestos and to mixtures containing crocidolite results in an increased risk of lung cancer. Mesotheliomas have been observed after occupational exposure to crocidolite, amosite, tremolite and chrysotile, as well as among the general population living in the neighbourhood of asbestos factories and mines and in people living with asbestos workers. In 1998, the WHO confirmed the carcinogenicity of chrysotile: The incidence of asbestos-related diseases is related to fibre type, fibre size, fibre dose and to industrial processing of the asbestos; no threshold has been identified for the carcinogenic risk of chrysotile; cigarette smoking increases the risk of lung cancer from asbestos exposure. Recently, an expert panel convened by the U.S. Institute of Medicine concluded that there is sufficient evidence that asbestos also causes laryngeal cancer. The rationale of these expert evaluations and more recent studies with a focus on chrysotile (e.g. North Carolina asbestos textile workers, the Balangero study) will be presented.

In the second part, recent estimates on the burden of asbestos-related cancer will be reviewed. The two most detailed and thorough national projects that estimated the burden of occupational cancer attributed 21 and 29% of all lung cancer deaths in men to occupational exposures and concluded that lung cancer accounts for more than half of the occupational cancer burden. Asbestos was by far the single most important exposure. Albeit asbestos has been banned in all member states of the European Union, the number of mesotheliomas is predicted to increase for another 5 to 10 years. Urgent and concerted action is needed, particularly in developing countries to curtail a second, even bigger wave of the global asbestos disaster.

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[SY03] Technology Transferring on the Prevention of Major Industrial Accidents

June 30, 16:00~18:30
Room: 336, COEX

Co-Chairperson: **Hyuck-Myun Kwon**, KOSHA
En-Sup Yoon, The Korean Institute of Chemical Engineers, Korea

[SY03-01]
Development of Oil Industry Safety Support System "PEC-SAFER"

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Japan Petroleum Energy Center, Japan

We address the petroleum industry safety foundation maintenance project to support the safety activities in the petroleum industry and prevent troubles. In this project, various kinds of databases are developed for the following three pillars and a computer system is constructed to organically connect these databases and effectively use them. The web site called "Safety Support System (PEC-SAFER)" is opened

(1) Systematization of knowledge about Accidents/Near-miss incidents

Examples of accidents and near-miss incidents not leading to accidents are systematized to construct databases as lessons by adding trouble causes and corrective actions. These databases are shared to prevent troubles from reoccurring.

(2) Education support for transfer of safety skills

Safety education references given from oil companies are put into databases to transmit safety skills and enrich safety education so as to improve the safety level of each engineer.

(3) Improvement of equipment control and construction management levels

Information on hardware related to the equipment safety to be shared is collected to utilize the database for the equipment control of refineries. Additionally, guideline about construction control is collected from oil companies to take appropriate measures against lowering of the construction quality.

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[SY03-02]
Weak Signals of Potential Accidents at Industrial Facilities

Patrizia Agnello[1], Silvia Ansaldi[2], Paolo Bragatto[2], Paolo Pittiglio[2]

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At industrial installations, near-misses, failures, non-conformances are "weak signals", with the potential of warning operator, long before accidents happen. By addressing these "precursors" effectively, accidents with fatalities or severe injuries may be avoided. Complete reporting and deep analysis of these deviating events, better if recorded in a database using a rough classification, is essential for an effective Safety-Management-System (SMS), according to BS-OSHA-18001 standard, to ensure that lessons learnt are applied to future operation. Furthermore an active monitoring of both equipment and procedures should be planned to find in time warning signals. It should include inspections of equipment and instrumentation, as required by regulations and standards, assessment of compliance with training, instructions and safe working practices. In case of human or organizational failure, audits in the SMS should be intensified and procedures should be reviewed. In case of mechanical failure, inspection plan should be reviewed, to prevent equipment deterioration and potential consequences. This paper presents a software designed and developed to provide safety managers of industrial facilities with a tool able to capture and manage all weak signals coming from the field. "Client-server" architecture has been adopted, with palmtop computer on the field, to communicate new non-conformances and to access deviating events database. This tool is basically aimed to discuss the non-conformance in every possible way and to match previous failures. The operator can exploit his own experience to revise SMS, safety procedures, and risk assessment, and activate equipment monitoring. As in complex facilities the number of failures and non-conformances is huge, all workers have to be involved in the job of recording as soon as possible these events. Their cooperation is essential for a successful implementation of the proposed system. A proactive behaviour of workers could be promoted by assigning a palmtop device to each squad operating in the facilities.

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[SY03-03]
Preventing Safety Accident by PSM Level and Strengthening Execution.

Su Gil Jin

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There had been occurred about 10 safety related accidents a year continuously in Yeosu-plant of LG Chem. Therefore in order to reduce safety related accidents in Yeosu-plant, we have introduced best case of domestic and abroad safety practices, however we couldn't decrease the safety related accidents as we expected.
At the result of administrators and safety team staffs 'study about what is the effective way of prevent safety related accidents, we have come to a conclusion to restart PSM that is a process safety management system already approved in advanced countries like United States in the area of safety management system.
We have made an effort to increase PSM level and strengthen executive ability for 3 years.
Finally, Yeosu-plant's safety related accidents have been decreased rapidly, so today I'm going to present how we practice the PSM.

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[SY03-04]
Industrial Dust Explosion Risk Management

Geoffrey Brazier

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New USA National Fire Protection Association Standards present options in the management of dust explosion risks. These options are classified as either prevention or protection measures. Each application requires unique assessment that includes the following considerations:

- Quantify the risk; define the characteristics for the process material
- Determine whether active or passive technologies should be employed
- Consider whether a hybrid of prevention & protection measures should be employed

Direct explosion venting to atmosphere is economically attractive, however, a vented discharge must be assessed for environmental impact;

- Can the flame ball be accepted?
- For indoor equipment, can a vent duct to atmosphere be provided?
- How will connected equipment be isolated to prevent propagation?
- Will the equipment survive the reaction forces from venting?
- Can buildings or equipment in the vent path accept the shock & temperature of the fireball?

The answers to these questions will often drive the plant owner / operator to alternative protection measures such as Suppression where the full explosion event is prevented and no flame ball is released.

What Does It Take To Achieve Dust Explosion Prevention & Protection?

Usually a hybrid of technical measures comprising *passive* and *active technology*. Passive technology functions by mechanical means, automatically, without external energy requirements. Explosion vents are passive. Active systems require one or more sources of energy to function. Explosion suppression systems are active.

Prevention of Fire + Explosion Ignition:

An important element of risk management is the implementation of *prevention* strategies & their inspection through integration into plant procedures. Three effective prevention actions are:

- Housekeeping to limit combustible load
- Management of electrostatic build-up; especially dusts having a low ignition energy
- Management of spark ignition sources (e.g. grinding, milling) by use of Spark Detection + Extinguishing

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[SY03-05]
A Study on Evaluation of Process Safety Management Effect

Young Soon Lee[1], Meejin Kang[2], Tae-Ok Kim[3], Hyuckmyun Kwon[4]

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The PSM system has been applied and maintained in Korea since 1995. For the first half of past 10 years, PSM contributed to systematic management of the process safety information and progress of the process technology, and furthermore enabled most companies subject to PSM regulation to be capable of performing the hazard evaluation. For the last half, continuing performance of PSM has brought the desired effect such as the steady decrease of accidents and the decrease of cost of loss.

While the number of companies subject to PSM regulation has been increased steadily, the major industrial accidents have been decreased rapidly since PSM was introduced. However, the number has remained below 10 and the decrease rate has been slowed since 1997. Recently, the number of accidents involving non-regular employees who didn't receive a proper education related to PSM system is on steady increase because in these days most manufacturing industries show a tendency to prefer non-regular employment to full-time or regular one. Therefore it is thought that several researches are needed to address the abovementioned issues; the first one is for the improvement of the current PSM to meet the change of the social structure and employment pattern, the second for the development of more reasonable indicator to evaluate the actual performance effect of the PSM, and the last for governmental or legislative support required to materialize these researches.

In order to improve and ensure PSM system, the government needs to establish some specific plans to boost PSM effectiveness such as monitoring and evaluating PSM performance status strictly, giving orders to make and carry out corrective plan, etc. Also in order to decrease the human error, PSM system has to be improved through application of the behavior characteristics of human, and the human resource management technology has to be developed.

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[SY04] Management of Risks in Work Environments

June 30, 16:00~18:30
Room: 208, COEX

Chairperson: **Tai Wa Tsin** International Occupational Hygiene Association
Moderator: **Seong-Kyu Kang**, KOSHA

[SY04-01]
Striving for Zero Harm in a Diverse Work Environment

Angelica Vecchio-Sadus

CSIRO Minerals, Australia

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's largest research and development agency with over 6,500 employees on 57 sites nationally. CSIRO faces some of the most diverse health and safety hazards compared with other Australian

government departments and agencies. High risk exists in a number of areas such as work involving equipment in motion, pressure equipment, heights, chemicals, gases, cryogens and water bodies. An important aim of CSIRO's health and safety policy is to prevent injury to employees through hazard identification and risk assessment. As a result of a fatality in 2001 and a review of safety culture, CSIRO implemented management systems and delivered strategic and targeted operational programs to address HSE risk, lower the likelihood of injury (and a fatality), achieve more active involvement by both management and employees, and improve performance. The strategies associated with reducing exposures to hazardous substances and environments may be understood and practiced generally, however, the potential for serious injury or even a fatality may still remain. However, we have found that good risk management principles embedded in business processes assist to lower the likelihood of injury. Although a lot of CSIRO's work is high risk, employees generally believe the workplace is safe. To strive for zero harm, CSIRO's 2007-2011 HSE Strategic Plan has new and enhanced strategies with a greater focus on safety culture, leadership and behaviour. The Plan identifies a need to maintain and communicate the HSE risk profile, focus effort and capability on highest impact activities, proactively identify emerging risk, and ensure employees remain risk-aware and continue to work safely. These efforts will contribute towards reducing risk, injury and the numbers and costs of workers compensation, and increasing employee involvement. Employees will be kept informed by various safety critical knowledge and skills, and their responses will be monitored.

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[SY04-02]
Basic Principles of Work Safety and Protection of Soldiers Employed in Peacekeeping Operations Against Exposure to Airborne Toxic Substances

Giuseppe Cisternino, Giuseppe Dei Bardi, Vincenzo Mauro, Giuseppe Mercadante

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The application of work safety principles to military activities is always difficult, due to the peculiar status and duties of a soldier. The main professional risk of military personnel is something unique which cannot be ruled and managed using conventional work safety laws and procedures. During a mission, a soldier can be also exposed to common health risks, including exposure to airborne toxic substances. There is no doubt that soldiers should be protected against such conventional risks, not less than any other worker.

When military units are employed in peacekeeping operations, there is often the problem of poor air quality, with presence of pollutants from industrial and other anthropogenic sources, which can reach dangerous levels, due a living environment degraded by the conflict, poor environmental legislation and lack of enforcement. While monitoring of air contaminants can be performed using consolidated methodologies employed in urban air monitoring, the air quality parameters referred to urban areas cannot be considered suitable limits of exposure for soldiers. Much higher threshold limit values proposed by industrial hygienists for chronic exposure in conventional workplaces - 8 hours per workday - are also inapplicable to this kind of military activities, taking into account particular circumstances such as the different duration of exposure (that can eventually reach 24 hours per day), the lack of fractioning of the exposure, the multiplicity of risk factors.

This work suggests a strategy to address the problem of exposure of soldiers to toxic substances with the aim of proposing reasonable guidelines to commanders. According to operational requirements, a set of different reference levels could be proposed, which can be regarded as trigger values for decision makers, in order to ensure protection of soldiers against exposure to airborne toxic substances, while accomplishing the military mission.

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[SY04-03]
Air Quality, Thermal Comfort and Hygiene for Workers of Waste Collection

Christian Felten, Thomas Sye, Hedtman Joerg

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Introduction

Working conditions in the sector of waste collection are often very bad. Workers can be exposed to numerous chemical substances, biological agents and dust. Hygienic conditions can be sometimes poor. During periods of high outdoor temperatures it is possible, that the employees are additionally exposed to heat and sun radiation. In vehicle cabins the temperatures can raise up to very high values. These hazards had to be quantified exactly to recommend suitable protection measures for the employees.

Methods

We carried out field trials in Germany to determine thermal comfort and air quality in air-conditioned and non air-conditioned vehicle cabins of dust-carts and at outdoor workplaces in normal operation. Pollutants taken into account and measured by standardised methods were VOC (Volatile Organic Compounds), aldehydes, diesel soot, carbon monoxide, nitrogen oxides, mould fungi, bacteria and dust. Thermal comfort was determined by using the operative temperature & the equivalent temperature. For temperature measurement a suitable measuring system and a thermal mannequin were designed.

Results
Based on the acquired values of equivalent and operative temperature and the derived values for PPD (Previsible Percentage of Dissatisfied) there is evidence that thermal conditions in summer in vehicle cabins of dust-carts without air condition are not reasonable. In most cases the PPD was 70 percent or higher. Besides the requirements of the German & European guidelines are not fulfilled which means the indoor temperature in the vehicle cabin should not be significant higher than the outdoor temperature.
All pollutants taken into account were allocable, partially with overstepping limit values. The values measured inside correspond to the outdoor concentration and depend on the working area basically.
Airborne moulds and bacteria occurred in some cases in higher concentrations, i.e. more than 50.000 cfu/m³ (cfu= colony forming units).

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[SY04-04]
Industrial Chemicals Risk Management in Korea

In Seop Lee

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Occupational diseases can be prevented, if the workers fully understand how to handle the devices and the hazardous substances that can be exposed. Also, these are the ways to prevent the chemical exposure level for the workers. Risk assessment is to control chemicals exposure level in the air. It makes to identify and do quantitative analysis of hazardous chemicals at workplace.

This system was started since 1972 in Korea. The system consists of working environment monitoring, setting of exposure standards and medical surveillance. Working environment inspection is to evaluate measuring and analyzing samples of harmful chemical substances. It is including 190 hazard factors such as noise, particulates, heat, processed metals, and chemical substances. When it goes against the exposure standard and serious concern about worker's health problem at the workplace, it should make better working condition through giving some penalties such as making plan for improvement workplace and prohibition facilities.

It tests 50 kinds of agents with two times per year since 1982. However, it is changed to personal air sampling from area measurement since 1990s. If the result is more than twice of the exposure standards for carcinogenic and chemical substances, it should be measured once every 3 months. However if the result is less than the exposure standards in the last two consecutive inspections or there is no change in the work process (carcinogenic substances are excluded), it should be tested once a year. It tests a quality control for making assurance and improves proficient samples. It was enforced two times every year since 1992. The program consists of two types. They are metals and organic vapours in the air. Also, it will test asbestos before 2009.

Based on the working environment management, it is useful to control the working conditions and do the occupational diseases epidemiology survey.

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[SY04-05]
Why All Mineral Fibers are not the Same: The Factors Which Differentiate One Fiber From Another in Today's Work Environments

David Bernstein

Consultant in Toxicology, Switzerland

Mineral fibers span a large range of compositions ranging from synthetic mineral fibers like glasswool to the natural mineral fibers know as asbestos. The experience with asbestos has sensitized the issue of fiber toxicity and has led to extensive studies evaluating the parameters which influence toxicity. These have often been summarized as dose, dimension and durability.

Numerous studies over the past decade have led to a better understanding of the relationship of synthetic mineral fiber biopersistence to chronic toxicity. In essence, if a fiber dissolves rapidly and disappears from the lung, it does not cause a carcinogenic effect. Recent publications have clearly shown the relationship of biopersistence to both

chronic inhalation toxicity and chronic intraperitoneal injection tumour response in the rat.

This concept was incorporated in 1997 into the European Commissions Directive (regulation) on man made mineral fibers in which it states that if the longer fibers (> 20 µm) (which are considered to be those length fibers with the most important carcinogenic potential) disappear with a clearance half-time of less than 10 days then that fiber type is exonerated from classification as a carcinogen.

The scientific information which has led to this relationship are reviewed and the relative toxicity of fibers used in today's work environments is discussed.

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[SY04-06]
Implementation of GHS and Chemical Risk Management for Workers in Japan

Muneyuki Miyagawa

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Recent activities by the Japanese Government for the implementation of the Globally Harmonized System for Classification and Labelling of Chemicals (GHS) will be reviewed, and the properties of the GHS as a tool for hazard communication and risk management will be discussed. The activities includes 1) translation of the GHS document into Japanese, 2) classification of approximately 1,400 chemicals under regulations by Japanese laws, 3) revision/introduction of the Japanese Industrial Standards (JIS) for SDS/labeling, 4) amendments of the Industrial Safety and Health Law including GHS-based labeling/SDS rules for the workplace, 5) seminars on the GHS for industries and for experts of occupational safety and health, 6) development of guidance documents and other tools for the application of the GHS. A number of issues as for the implementation of the GHS have been identified through these activities, some of which are due to ambiguous descriptions in the GHS document (a product of compromise), and others are coming from the nature of the GHS (the principle of classification based on existing data, and the flexibility of the system with many options). The GHS document is not providing detailed rules for the classification but rather suggesting conceptual principles in many hazard classes, so that technical guidance documents were prepared for the governmental classification project, including some local rules to give definite directions to the classifiers. Because of those characteristics of the GHS, complete and immediate global unification could not be expected both for classification and labeling, however, it is important to implement the GHS just as a framework for communication, which would become the first step toward the substantial harmonization in the future.

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[SY04-07]
Chemical Substances

Karin Grahn[1], Karl Krook[2]

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In our everyday lives, we are surrounded by a large number of different chemicals and are continually becoming aware of new problems as a result of them. There are EU laws, for example REACH, and national laws regulating substances and safe work and risk assessments are crucial when handling chemicals. Chemical Substances is the necessary tool for producers, suppliers and users of chemicals as well as for occupational hygienists and those responsible for dangerous waste or transportation of goods.

Chemical Substances is an interactive register of more than 31 000 chemical substances with more than 2.6 million data of which 310 600 are searchable names. Those are divided into English, Swedish, German and French as well as trade names. Chemical Substances has been continuously improved for more than 15 years and is provided both as a cd-rom version, annually updated, and as a web version, updated twice a year. The database supplies information about physical data, structural formula, risk and safety phrases, hazard symbols, toxicology/ecotoxicology, directions for handling and storage, disposal and transport directions for senders and transport organizers, etc. This comprises the possibility to copy/paste/print Transport Instructions in writing, a List of All Available Information about a substance, basis for Product Safety Data Sheet and Warning Label.

Chemical Substances includes full texts of Regulations, Directives and Decisions from the European Community, as well as the substances that are regulated.

Included in Chemical Substances are also three calculation programs: **Classification of dilutions** which calculates risk phrases and hazard symbols, marine pollutant and flammability. **Limitation of quantities** when transporting

dangerous goods which also calculates Limited quantity provisions for air transports. The last program calculates the **risk of major accident** involving dangerous substances.
Chemical Substances is produced by Prevent Sweden – Management and Labour Improving Work Environment.

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[SY04-08]
The Automated Monitoring System of Health of Working and the Estimation of Degree of Professional Risk

Smagulov Nurlan[1], Sraubaev Ermek[2], Sultanbekov Seinulla[2], Abdrasheva Baglan[2], Aliev Bachyt[2], Kober Viktor[3]

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The intensification of productions, character of the industrial environment, way of life are major factors with influence on worker's health. Among them the most significant are factors of an industrial environment. In conditions of increase of a share of emotional overloads various diseases accrue. In this connection there is obvious a necessity of strengthening of attention to practically healthy person, revealing of factors of the manufacture causing a psychologic and emotional overstrain of the person, development of scientifically proved preventive recommendations on decrease of negative influence.
These tasks are solved by system of monitoring at the industrial . The system contains databases on the staff, sanitary-and-hygienic working conditions and hospital sheets with temporary disability. The degree of influence of industrial factors on disease is ranged and it is taken into account in the program for allocation of the priority factor. The hygienic estimation is made on an actual level of harm. Workplaces with maximum values of harm's levels are allocated only. There are not many of such places, but they demand prime measures on improvement. On the basis of the revealed distinctions between a level of disease in professional groups is established of the most typical diseases (industrial - caused diseases). Analyze of pollutions' concentration at the enterprises and the simultaneous analysis of disease of workers allows to establish interrelation between influence of dangerous substances and early effects of influence (disease). The system reveals not only professional "groups of risk", but also "persons of risk" between workers for which the further continuation of contact with professional harmfulness will result in significant deterioration of health. The system allows to conduct stage-by-stage management of an exposition of the priority harmful factor, proceeding from criteria of the safe experience of work for concrete working conditions, determination of optimum sequence of improving actions.

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[SY05] Basic Occupational Health Services (BOHS) For All

June 30, 16:00~18:30
Room: 321, COEX

Co-Chairperson:
Jorma Rantanen, International Commission on Occupational Health
Ivan Dimov Ivanov, World Health Organization

[SY05-01]
Filling the Global Gap in Occupational Health Services

Jorma Rantanen

International Commission on Occupational Health, Finland

Occupational health services (OHS) are available only to 10–15% of the 3 billion workers of the world. The access to services is not in correspondence with the needs. Growing fragmentation of work life, outsourcing, and downsizing, fixed and short-term contracts are obstacles. The number of small enterprises, micro-enterprises and self- employees is growing. Development of new low-cost, locally adjusted but still high quality services is needed. A joint WHO/ILO/ICOH effort for development of *Basic Occupational Health Services (BOHS)* was launched in 2003. The objective is to provide occupational health services for all working people in the world.
The content of BOHS includes the minimum which is needed for providing OHS:

- Surveillance of work environment and Risk assessment
- Health surveillance and health examinations
- Advice on preventive and control measures
- Prevention of accidents

- Health education and health promotion, promotion of work ability
- First aid and treatment of acute illnesses,
- Diagnosis of occupational diseases
- Provision of general health services, if appropriate.

Good practice guidelines and toolboxes are produced for service providers on planning of OHS, risk assessment and management, ergonomics and safety, assessment of psychological conditions and stress and diagnosis of occupational diseases, just to mention a few. Special training in occupational health for primary health care workers is also needed. The role of public service will be the most central one as the market models are not able to ensure universal coverage of services.

Some countries have made a decision to implement BOHS in their services systems. International guidelines have been translated into 8 different languages and pilot projects for implementation are going on.

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[SY05-02]
BOHS as Part of Primary Health Care

Ivan Dimov Ivanov

World Health Organization, Switzerland

The 60th World Health Assembly in 2007 endorsed the WHO global plan of action on workers' health for the period 2008-2017. In particular, the Health Assembly urged the Member States to work towards full coverage of all workers, including those in informal economy, small- and medium sized enterprises, agriculture and migrant and contractual workers, with essential interventions and basic occupational health services for primary prevention of occupational and work-related diseases and injuries. Furthermore, the Health Assembly requested WHO to set definite timeline and indicators for the establishment of basic occupational health services at global level.

The global plan of action stipulates that one of the principles to implement action on workers' health is to ensure that all components of the health system are involved in an integrated response to the specific health needs of the working populations. The improvement of the performance of and access to occupational health services is among the five main objective for action by WHO on workers' health. Such action requires integrating the development of occupational health services into national health strategies and health-sector reforms and plans for improving health-systems performance.

Being often the first and sometimes the only level of contact between the workers and the national health system, occupational health services are integral part of primary health care. This presentation will explore the needs for strengthening the main building blocks of the health system with regards to occupational health, including governance and leadership, human resources, financing and procurement, information and service delivery in order to ensure universal coverage of and access to essential health interventions and basic services to prevent occupational diseases and injuries.

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[SY05-03]
ILO Approach to Basic Occupational Health Services (BOHS)

Igor Fedotov

ILO, Switzerland

Although the establishment of occupational health services is mandatory under many national laws, their coverage of working populations is generally low. In many industrialized countries it is below 50%, but in most countries the coverage is below 10%. Despite the goal to provide universal coverage to all workers, including those in the informal economy and agriculture, the tendency nowadays is to cut them even further because of increased competition experienced by enterprises in times of globalization.

The ILO policy in this area is formulated in the Occupational Health Services Convention No.161 ratified to-date by 26 countries. Other countries voluntarily apply the Convention No. 161 and its Recommendation No. 171 as models for establishing requirements for organization and functioning of occupational health services. The Joint ILO/WHO Committee on Occupational Health recommended promotion of BOHS to all through their gradual development from basic models of organization and functions towards more comprehensive services. This recommendation has received a new impetus after the adoption of the ILO Global Strategy on Occupational Safety and Health (2003) and more recently the Promotional Framework for Occupational Safety and Health Convention, 2006 (No.187). In the light of these instruments, occupational health services are considered as an integral element of national occupational safety and health systems. The development, financing and provision of occupational health services are therefore linked to the overall

development of infrastructures (national OSH systems) for performance of occupational health practice and should be pursued in a coherent manner alongside with establishment and implementation of national OSH programs. This approach provides a new policy perspective for the development of occupational health services for all in a wider context of the need to place workers' protection high on technical and political agendas.

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[SY05-04]
The Development of Basic Occupational Health Service (BOHS) Model for Underserved Working Population in Thai Primary Care Units

Somkiat Siriruttanapruk[1], Tsuyoshi Kawakami[2], Koji Wada[3]

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In Thailand, more than half of the working population are agricultural, informal, or self-employed workers. They are unable to get access to OH services because of their work characteristics e.g. scattering work site, frequent mobilization, and less budget for OSH investment. The Ministry of Public Health recognized the situation and co-operated with the ILO to develop BOHS for those underserved workers in term of feasibility and suitable OH services. The desirable BOHS model should be integrated into existing primary health care services with no need to have extra investments or develop any new system. Therefore, the research team had conducted a pilot study on BOHS model development in 17 Thai primary care units (PCUs) in 8 provinces during 2004-2007. The activities included setting the BOHS guidelines, development of training curriculum for health officers, and pilot provision of BOHS.

The study showed all PCUs were able to provide BOHS. The target groups were mainly farmers. The activities performed included OH education (100%), first aid and emergency treatment (77%), working environmental survey in farms (38%), and health screening for pesticide exposure (79%). The pilot project can raise an awareness of the importance of OH in farmers and other workers in informal economy among health authorities and officers at provincial and local levels.

In conclusion, the project showed that BOHS for underserved workers can be integrated effectively into a general health service system at the PCU level. However, policy support, resource allocation and continued capacity building to increase knowledge and skills for the health care staff are needed to improve the quality of the services.

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[SY05-05]
Experience of BOHS in China

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China is a developing country. The economic development is unbalance, and occupational health work is unbalance either, particularly in occupational health services system. The resources allocations of occupational health services are quite different at geographic areas. The occupational health work in eastern coastal cities is better developed than Midwest Cities. Big city is better than small town and rural area, large enterprise is better than small enterprise. Especially, individual enterprise workers can not access to occupational health service actually.

In 2006, in order to enhance the level of prevention and treatment of occupational diseases, and accelerate the infrastructure building of basic occupational health service system, MOH decided to launch a three-year pilot project of basic occupational health services in 19 counties and districts of 10 provinces and municipality. The 19 pilot regions are different in economic development and the basis of occupational health work. Although the foundation of pilot project is weak, each piloting county has made many efforts. Guided by the project leading group and the project bureau, each pilot county strengthens the leadership of, coordination and supervision with taking of responsibility for organization and implementation of BOHS project. At present, most counties made many progresses. Firstly, project action plan was formulated, and organizational structure was conducted. Secondly, coordination mechanism was established and the network was formed. Thirdly, capacity building was strengthened. Fourthly, safeguard mechanism was implemented. Fifthly, publicity action was intensified.

Basic Occupational Health Service (BOHS) Pilot Project is a powerful safeguard to enhance the coverage of occupational health service, to promote economic and social harmonious development. In the next phrase of pilot project, to provide technical support for pilot areas, improve inspection and law system, increase information exchange from trail areas, publicize experience in nationwide and evaluate program by terms should be our work priorities.

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[SY05-06]
Capacity Building for Improvement of BOHS in Vietnam

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Background: In Vietnam, small and medium scale enterprises constitute more than 95%. During past years, occupational diseases (ODs) tended to increase in both number of suffering workers and types of ODs. Although basic occupational health services (BOHS) already exists in Vietnam, their capacity is in doubt.

Study objectives: Assess existing capacity of providing BOHS in Vietnam, and propose a plan of capacity building for improvement of BOHS in Vietnam

Study methods: Collect and analyse existing information sources on occupational health and safety.

Results: Every year, only 20% of managed enterprises (approximately 3% of total enterprises) monitored working environment; 15% of managed enterprises organized periodic medical check-up for employees; and only 5-8% employees exposing to occupational risk factors were checked for occupational diseases. Work-related accidents increase by 7.59% every year. It is underreported number. Vietnam has a comprehensive network of occupational health from central level to grass root level. BOHS are provided by centers for preventive medicine at provincial, district levels and health bodies at enterprises. However, they are mainly provided in large scale and state enterprises. There has been a lack of human and material resources for providing BOHS.

Action plan for capacity building: Activities of BOSH development in Vietnam are including strengthening IEC activities, development of intervention models for occupational disease prevention, fostering capacity of occupational disease diagnosis, re-examination, treatment and rehalibitation, completion and supplementation of occupational health related legislation. The Action plan is also towards to preparation for ratification of 161 Convention on occupational health services in Vietnam.

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[SY05-07]
The Experience of Brazil in Development of Basic Occupational Health Services

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Brazil is the largest country in Latin America, with approximately 187,488,859 inhabitants (IBGE, 2006) and an economically active population of 96,031,971 (IBGE, 2005). In the last two decades macro-economic changes have generated new types of work arrangements (temporary work, informal work, etc) thereby leading to modifications in the workplace structure. These new forms of work arrangement leave many workers without proper benefits and protections. Most worker benefits are available only for those holding a formal category of work agreement. A projection of more than one million workers are affected by some accident or illness due to work (Hoefel, M., Dias, E., 2005).

Health is a universal right and a State duty in Brazil, a legate from the Federal Constitution enacted in 1988. The workers´ health is part of this achievement, warranted by health care facilities organized in a national hierarchical network based on collegiate decisions, where societal participation is required in each administration level (federal, state and municipal) named Unified Health System (*Sistema Único de Saúde* – SUS).

Occupational health care has traditionally been provided by a set of private health care institutions or in the workplaces by the firms themselves, following norms from the Ministry of Labour, responsible for workplace inspections and issue of penalties. SUS is the only universal access for all workers, regardless of their work situation. Therefore, SUS assumes a crucial social role, serving as the only public policy of universal coverage for all workers (Hoefel, M., Dias, E., 2005). • • •

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[SY05-08]
Achievement of Occupational Health Service in Small-Scaled Industries

Min Yoo, Hee-Lyun Park, Seong-Kyu Kang

KOSHA, Korea

Under the Occupational Safety and Health Act in Korea, employers with less than 50 employees are not responsible for hiring or consulting an occupational health manager at their workplace. Therefore, small-sized workplaces lack of occupational health intelligence and vulnerable to occupational diseases. To protect the worker's health in small-sized workplaces, KOSHA launched a project titled 'Technical and Financial Assistance for Small-sized Workplaces' in 1995. The key objective of this project is to provide occupational health service for small workplaces and promote their ability to improve worker's health.

Occupational nurse and hygienist from occupational health service center visit workplace four times a year to provide technical assistance. In particular, they conduct work environment measurement and special medical examination for workers in manufacturing workplaces with less than 5 employees. Occupational hygienists support the work environment management in workplaces by managing chemicals and inspecting local ventilation system. When occupational nurse visits the workplace, they help workers quit smoking, reduce drinking, and manage stress. They also measure worker's blood pressure, blood sugar, and cholesterol level.

In 2007, 14,000 workplaces received technical support through the project. Among them, workplaces assisted by the project for 3 consecutive years showed better improvement rate than that of assisted for 2 consecutive years or assisted for the first time in several items such as getting medical examination, operating ventilation system, etc. In addition, through the clinical test the number of workers at risk of health problems decreased dramatically.

Under the project, basic occupational health services were provided to small workplaces, and a foundation was laid for securing workers' health. KOSHA has a plan to expand this project continuously to form a foundation for the improvement of occupational health and prevention of occupational diseases in Korea.

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[SY05-09]
The Impact of Contract-Programs In Developing Occupational Health for Tunisian Small and Medium Enterprises (SME) Employees

Halim Hamzaoui[1], Dhouha Rezgui[1], Lotfi Chemli[1], Kamel Lahmar[2], Ahmed Bouzouida[1], Ali Rejeb[2]

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Since 1996, occupational health services are mandatory for all enterprises despite their activities or their employees' numbers. For SME, occupational health services are provider by interenterprise occupational health grouping (IEOHG). In order to help these IOEHG to develop their activities and to improve their medical and technical services, the Tunisian government give them a subvention of 1 TND million a year (800.000 US$) in form of conract-program.

Four contract programs were realized (on 1996, 1997, 2000 and 2005) for a global amount of more than 4 millions TND, what allowed the IEOHG the development of their administrative, medical and technical workforce and to acquire the medical and technical equipments necessary for their activities. The number of companies members to the groupings is crossed of 1850 (1996) in 8370 (2006). The number of covered employees doubled in 10 years crossing of 162.000 (1996) in 320.000 (2005). Besides national, regional and inter - Companies sensitization days focused in occupational health and safety were realized in 22 governorates covered by the IEOHG.

Conclusion: The Four contract programs having allowed the development of the infrastructure of the IEOHG what engendered an increase of their activities, it would be desirable that next contract programs turn to an improvement of the quality of the services (performances).

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[SY06] Occupational Safety and Health Strategies for Vulnerable Workers

June 30, 16:00~18:30
Room: 402, COEX

Chairperson: **Sanghyuk Lim**, Wonjin Institute for Occupational & Environmental Health, Korea

Moderator: **Sangyun Lee**, Solidarity for Worker's Health, Korea

[SY06-01]
Demeaning Work, Standing Work

Shinbum Kim

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Vulnerable workers mean unorganized workers, contingent workers, small enterprise workers, female workers and migrant workers in Korea. They have no union or no right for healthy work. "Organization for health" is a very important KCTUs' occupational health and safety slogan. KCTUs' strategy for vulnerable workers was established on August 2006. Female service workers was selected to first target to organize for health. For two years, KCTU have identified main health issues of female service workers and made an action plan to solve the main issue. As a result, KCTU is now launching campaign to seat for female service workers.

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[SY06-02]
The KFCITU Strategy to Ensure the Safety and Protect the Lives of Construction Workers in South Korea

Jong-Kook Park

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Construction sites in South Korea are so unsafe that one can summarize the situation by labeling it as a, "land of accidents." Despite this, the government has taken steps to weaken national legislation and policies pertaining to safety standards rather than making them stronger. In doing so, construction companies benefit and are the winners, at the sake of workers' safety. Immediately taking power, the Lee Myung Bak administration introduced a total 265 legislative reforms to existing policies and guidelines. Of these, 60 were under the Ministry of Labour and 35 were connected to occupations safety and health standards; consequently, endangering the lives of construction workers. This was evident, when a fire broke out at a refrigerated warehouse under construction on January 7, 2008 at around 10:00 am, killing 40 construction workers and seriously injuring another 17 workers.

Instead of relying on the South Korean government to implement policies and guidelines, the Korean Federation of Construction Industry Trade Unions (KFCITU) believes that only through workers organizing can there be any changes to ensure the safety of construction workers and prevent future work-site related deaths. In addition, the KFCITU will continue to advocate for stronger safety regulations and guidelines. The KFCITU is committed to finding solutions to address the numerous accidents occurring in construction sites all across South Korea. More importantly the union with the support of workers is committed to preventing these accidents so that workers do not have to risk their lives just to make a living.

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[SY06-03]
New Challengers in the Fight against the Slavery Work in Brazil

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Despite accusations from the 1970's that slavery work existed in the North of Brazil, it was only in 1995 that the country recognized the practice of slavery labour actually existed in its territory. At that time, the Ministry of Labour and Employment of Brazil created the Special Group of Itinerant Inspection ("The Itinerant Group"). In March 2003, President Lula announced the National Plan of Eradication of Slavery Work and created the National Commission for the Eradication of Slavery Work.

From 1995 to 2007, "The Itinerant Group" freed more than 25 thousand workers in about 570 actions. Brazil has been praised by ILO as a reference country in the fight against the slavery work.

In Latin America, in spite of the high index of ratification of the ILO Conventions related to this theme, little attention has been paid to the slavery work, with notable exception of Brazil. The experience in the combat of slavery work in Brazil has been an example for others South American countries.

In this work we discuss what is considered slavery work, how a common worker turns into a slavery worker, what are the actions of the government to combat slavery work and others proposals to eradicate slavery work. It is also stood out a lamentable fact that happened recently and harms the actions of "The Itinerant Group". Federal senators disqualified and threatened the executioners of an action in the Para state on June 30th, 2007 that was the stage of the largest workers' liberation of the country's history. In the whole, 1,064 workers of a sugarcane farm were rescued by "The Itinerant Group". Important distributing fuel companies that follow the National Pact for the Eradication of the Slavery Work already affirmed that they are stopping marketing with that company until its labour situation is regularised.

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[SY06-04]
Solidarity with the Vulnerable Workers

Ahmed Khalef

ILO Actrav, Algeria

Historically, the trade unions have been always in solidarity with the most vulnerable; solidarity being the main weapon of their action. However, beyond that, Trade unions act in favour of these categories of workers for many reasons:

The defence of the interests and rights of migrants, disabled or aging workers is the best way to avoid the exploitation of such workers by unscrupulous employers for exerting a downward pressure on wages and working conditions on all the other workers. The equality of treatment and opportunity advocated by the ILO and encapsulated in its conventions is a solid reference.
The inclusion of vulnerable workers in trade union organizations should help strengthening the overall influence of the trade union movement. The dynamism of these categories of workers must be able to express themselves in trade unions.
Also, the trade union movement can play a leading role in integrating these categories of workers as it is a school of democracy and the only place where their participation in decision-making and in the community is ensured.
In any case, the inertia of the unions would in any way be offset by non-governmental organizations which, despite all their goodwill, lack the legitimacy to negotiate working conditions and to ensure a sustainable future for these categories of workers.

ILO: International Labour Organization
ACTRAV: Bureau for Workers' Activities

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[SY06-05]
Health Status and Management Plan of Migrant Workers in Korea

Kyu Sang Kim

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The aim of this study is to understand general situation on environmental exposure and health effect in workplaces of migrant workers in Korea and establish preventive general policy of health management.
Nationwide survey on employment status, statistics on industrial injury and the data on special health examination as well as questionnaire were used to investigate status on injury and disease of migrant workers. The questionnaire was about the risk factors and health status of migrant workers to analyse the character and related factors. The data of domestic workers on clinical items and biological monitoring, statistics on injury were compared with these data.
The injury rate of migrant workers including death or injury were increasing, but the portion of these results were so small in respect of total industrial injury. But the rate of injury was higher than domestic workers. The rate of performance on special health examination was so small while the extent of exposure to hazardous chemicals and risky work was high. The health and industrial injury cannot be separated from legal/illegal employment of migrant workers. The problem in conversation to solve the problem, stress and differentiation from social and cultural difference is present from lack of skill in language. The improvement of working environment and basic condition is necessary.
For management of health of migrant workers, system for long-term surveillance and treatment of migrnat workers after exposure to carcinogen or hazardous chemicals as well as periodic health management for legal stay. Health management passport can be one of the system to control and manage legal migrant workers as well as illegal workers for pre-, post- and tracing management system.

Key words : Migrant workers, Health status, Biological monitoring

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[SY07] Approaches to Safe Nanotechnology: A Global Perspective

June 30, 16:00~18:30
Room: 304, COEX

Co-Chairperson:
Max R. Lum, National Institute for Occupational Safety and Health, United States
Marcus Berges, German Social Accident Insurance (DGUV), Germany

[SY07-01]
Guidelines for Safe Nanotechnology

Max R. Lum

National Institute for Occupational Safety and Health, United States

Nanotechnology is revolutionizing the development of new materials with unprecedented functional properties. The field of nanotechnology will likely revolutionize a broad range of consumer, medical, and industrial sectors. As with any new technology, we are faced with many unknowns; all of which raise questions concerning

occupational safety and health. The United States, National Institute for Occupational Safety and Health (NIOSH) is committed to ensuring worker protection as nanotechnology develops.

It is imperative that the scientific community come together to advance our understanding of nanotechnology and its implications in the workplace. It is paramount for nations to share any relevant information or experience pertaining to the field of nanotechnology based on a broad and strong foundation of basic research. Through continued coordination with other governments, industry and other stakeholders the occupational safety and health community can remain a leader in the responsible development of nanotechnology.

As our knowledge grows, NIOSH plans to provide valuable guidance to the safe handling of nanoparticles and other safe approaches to nanotechnology. This will be an effort that evolves as the technology advances, our knowledge and experience grows and priorities evolve.

NIOSH developed the document *Approaches to Safe Nanotechnology* in October 2005. Copies are available for Congress delegates. The document describes the NIOSH strategy for addressing priority research on the occupational safety and health aspects of nanomaterials and to understand the potential risks that nanotechnology may have to workers. The approach is driven by the breath of issues, from exposure to managing risks and the overarching need to measure and characterize nanomaterials in various work environments. I am pleased to provide a 2008 update on our research approach and framework which continues to emphasize understanding and prioritizing potential risks as well as the mechanisms and strategies to manage such risks.

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[SY07-02]
Korean Actions for Safety Nanotechnology

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South Korea is considered as one of the major developers of nanotechnology. Korea is placed on the worlds' 5th for the number of articles published on SCI journals and the 7th place for the number of patent on nanotechnology.

The R&D budget on nanotechnology is projected to dramatically increase in the recent years. Despite the optimistic future of nanotechnology, there was relatively little interest on assessment of safety of nano-particles. The "1st comprehensive plan for the development of nanotechnology", established in 2001, is primarily focused on the development of nanotechnology in the aspect of economy.

However, in recent 2-3 years, due to rising interest on social impacts of nanotechnology, the 2nd "comprehensive plan for the developmental nanotechnology (2005)" included safety of nanotechnology as one of the four main goals. KOSHA held the international symposium on safe nanotechnology titled "The Health Risks associated with Nanotechnology and Nano-particles" in 2005. It triggered concerns on safe nanotechnology especially on protecting workers from unknown possible hazard of nano-particles. Several studies on cytotoxicities *in vitro* with commercial nano-particles were followed by KOSHA researchers. More international conferences were held by the Korean society of environmental toxicology for information exchange on progress of safe nanotechnology. In the recent 2~3 years, some research group have conducted the projects on hazard assessment of the engineered nano-particles such as silver nano particle and carbon nano tube. A specialist group for standardization of measurement under the Ministry of Econo-technology submitted the standard method on measurement of silver nano-material to the ISO in 2007. Recently, the instruments for generation and measurement of nano particles were developed, which would expected to make the studies on inhalation toxicity for nano particles more active. KOSHA have been performing research on welding fume nano-particle, which is generated intendedly at workplace.

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[SY07-03]
Actions for Safe Nanotechnology in Japan

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In Japan, same as in other developed countries, newly developed nanomaterial is hoped to contribute to the economical break through. And already 70t of SWCNT and 60t of MWCNT are used yearly as industrial materials in Japan. Although the technological development is very competing and money spending and the failure to take out to the market will be a great risk, the starting up of the surveys for the safety like toxicology studies, developing appropriate methods for controlling the working environment, and surveys for how they are producing or handling and what is the level of exposure for workers has been rather slow. But government have realized the

importance and in FY2007 Council for Science and Technology Policy decided "Promotion of Novel Interdisciplinary Fields Based on Nanotechnology and Materials, Research & development" to be a new group of cooperative policies and enforced the administrative organs to enforce the comprehensive survey and research for safe nanotechnology cooperatively. At Feb 2008 Ministry of Health, Labour and Welfare announced the guideline for the workers producing or handling nanomaterial. The progression of survey and research for safe nanotechnology in Japan will expected to be accelerated.

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[SY07-04]
Promoting Safe Use of Nanotechnologies in Australian Workplaces: The Nanotechnology OHS Research and Development Program

Tom Fisher, Howard Morris, Brett Bissett

Australian Government, Australia

On 1 May 2007, the Australian Government announced support for implementation of the National Nanotechnology Strategy (the Strategy). The Strategy will help Australia benefit from nanotechnologies while effectively addressing health, safety and environmental issues and community concerns.

The objectives of the Strategy are to:

- encourage the responsible uptake of nanotechnology;
- ensure the effective management of health, safety and environmental impacts;
- establish world class metrology capability that support regulation and industry use; and
- build public confidence by providing balanced and factual information about nanotechnology.

Under the Strategy there is a particular focus on the environment, and public and occupational health and safety issues. The Australian Government has funded the Office of the Australian Safety and Compensation Council (ASCC) to establish a nanotechnology OHS research and development program (OHS Program) to help examine and address any potential OHS issues.

Four key aims of the OHS Program are to:

- undertake Australian nanotechnology OHS research
- develop and evaluate workplace nanotechnology OHS controls
- review Australian OHS regulatory framework in relation to nanotechnology, and
- provide OHS support for Australian nanotechnology businesses and research organizations.

The program is primarily Australia-focused but will also contribute to global efforts relating to nanotechnology OHS through extensive consultations and collaborations with Australian and overseas researchers and policy and regulatory agencies.

Australian priorities for nanotechnology OHS policy and guidance development are currently being identified. By considering the priority materials, applications, processes, and control methodologies relevant to Australian industry and research organisations, work on potential OHS issues will target Australian needs effectively.

This paper will outline current, ongoing and planned research and development activities in the four key areas of the OHS Program, and relate these activities to other Australian Government initiatives being undertaken as part of the Strategy.

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[SY07-05]
Measuring Inhalation Exposure to Nanoparticles; Current Methods and Requirements

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Workers and researchers involved in the manufacturing and handling of nanoparticles and nanomaterials are likely exposed by inhalation, but published information on exposures in the workplace is still sparse. The main reason of this sparseness is that measuring exposure to nanoaerosols is not an easy task. It differs in significant ways from traditional aerosols, for which established measurement procedures and techniques exist. Although guidance for assessing nanoaerosol exposure has been recently been proposed by published documents like ISO (TR/27628, 2006), there is still insufficient scientific evidence to decide on which particle size range and health-relevant exposure parameters of nanoaerosol should be measured – size selective number, surface, mass concentration or something else – to characterize exposure, or which are the most appropriate instruments or methods to use. Here, the current state-of-art and applicable measurement techniques and solutions to characterize exposure to nanoaerosol will be discussed, and the measurement requirements for the future considered.

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[SY07-06]
Measuring Exposure to Ultrafine and Nanoparticles at Workplaces

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German Social Accident Insurance (DGUV), Germany

One part of the risk assessment of nanoparticles comprises the assessment of the exposure. Although the hazard from nanoparticles is not clearly defined, there appears to be a particular health risk from ultrafine dust particles and nanoparticles respectively in respiratory air. Ultrafine aerosol particles are for the most part byproducts in thermal and chemical reactions whereas nanoparticles are specifically engineered. BGIA (Institute for Occupational Safety and Health of the German Social Accident Insurance (DGUV)), in conjunction with the German institutions for statutory accident insurance and prevention, carries out a measurement programme at selected workplaces. The aim is to gather and catalogue information on ultrafine - and nanoparticles occurring at different work processes. Workplaces in metal processing like melting, casting, welding, soldering, cutting, laser beam processes, workplaces in glass production, vulcanization of rubber, processes in food industry like bakery or meat smokery, or workplaces on an airport field were scrutinized. The particle size distribution between approximately 10nm and 700nm and the number concentration of these particles were determined. BGIA was equipped with a suitable measurement device (scanning mobility particle sizer – SMPS) for these particular measurements, added with instruments like a cascade impactor or aerosol samplers for the inhalable and respirable dust fraction. The number concentrations in the measurement range varied between approximately 10 000 particles per cm^3 in clean areas up to 40 000 000 particles per cm^3 in welding plumes. Peaks in particle size varied between a few ten nanometers up to a few hundred nanometers, depending on the degree of aggregation and agglomeration. We also like to report on first measurements of nanoparticles in the air.
The institutions for statutory accident insurance and prevention hope to provide thus a basis for a discussion on this topic, and improve the possible methods of prevention.

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[SY07-07]
A Global Review of Safe Nanotechnology Initiatives: Research Gaps and Future Issues

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The nanotechnologies offer opportunities for social development but uncertainties prevail about their impact on human and environmental health. Right now there is still a huge gap between technological progress and research into the health and safety aspects of nanomaterials. Since the turn of this century nanotechnology has grown exponentially, as confirmed by the number of products on the market and the funds dedicated to research and development in this sector. Estimates have it that by 2014 nanotechnologies will be widely used in our society, and ten million new jobs will be created. The international scientific community is showing increasing interest in the risks of exposure to nanomaterials in the workplace: a recent survey on research priorities in occupational safety and health run by the Italian Institute for Occupational Prevention and Safety (ISPESL), has shown that the safety of nanotechnology has received the highest score among all the priority issues in the perception of the of social partners representatives involved. In this view, the following gaps and needs for the scientific knowledge come to light: limited information; difficulties in relating nanotechnologies and production of nanomaterials to specific areas of application; efforts required to assess the hazards posed by nanomaterials in realistic exposure conditions; ethical issues about nanotechnology in the workplace likely to arise from today's knowledge about the hazards of nanomaterials and the risks they may pose to workers. In view of this imbalance between our scant knowledge of the potential health risks linked to the use of nanomaterials and the exponential spread of this technology likely in the near future, there is a pressing need for research focused on risk analysis for exposed workers. Finally, an integrated approach to research, cooperation and communication strategies is essential if we are to direct our efforts towards responsible and sustainable growth of nanotechnologies.

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[SY08] Achieving Business Excellence in the Global Economy through OSH Management

June 30, 16:00~18:30
Room: 330, COEX

Chairperson and Moderator:
Mei-Li Lin, National Safety Council, United States

[SY08-01]
OSH as Competitive Edge

William Bozzo

DynMcDermott Petroleum Operations Company, United States

DynMcDermott (DM) Petroleum Operations Company, headquartered in New Orleans, Louisiana, USA, has successfully employed integrated Occupational Safety Health and Environmental (OSHE) practices across 6 locations through its workforce of 500 employees. DM's disciplined Baldrige-based business management model provides a business practices umbrella arching over four complimentary OSHE management systems (ISO 14001, ANSI Z-10, the EPA Performance Track Program, and the OSHA Voluntary Protection Program) to deliver excellent OSHE performance results. The outcome has been steadily improving business and near perfect OSHE performance (against targets), with nearly $20 million in economic benefits since its implementation in 2000.

Business improvement tools such as Six-Sigma and Project Management, married with OSHE and integrated throughout the organization have created real reductions in lost work time and injuries (70% to 95%), and in waste generation and releases (95%). These tools augment DM's culture of OSHE excellence, benefiting not just workers, but also the community, the environment, and the economic well being of the company, underscoring sound OSHE management's contribution to the triple bottom line. Indeed, DM's success was independently recognized through receipt of the prestigious 2006 Robert W. Campbell Award (only small company winner in the Award's history) from the National Safety Council and the 2005 Malcolm Baldrige Quality Award (premier Business Performance Excellence honor) from the U.S. Department of Commerce. DM's strong OSHE ethos supports healthy productive workers, who in turn contribute positively to their workplace and community. It benefits workforce retention and recruiting. This OSHE ethos also benefits the environment of the facility, as well as the environment of supplier and customer facilities. Hence, successful integration of employee-owned OSHE programs into a business culture is important to the bottom line, and indeed to the triple bottom line, that is the economic, social, and environmental fabric of the organization.

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[SY08-02]
Attributes of an Effective OSH Management System - A Johnson & Johnson Case Study

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Johnson & Johnson is the world's most comprehensive and broadly based manufacturer of health-care products for the consumer, pharmaceutical, medical devices and diagnostics markets. The company employs 119,200 people in 57 countries around the world. Its products are sold in over 175 countries, resulting in total sales of $61.1 billion for 2007. Managing occupational safety and health for an organization of this size and diversity requires a customized approach. It starts with creation of global standards that establish health and safety expectations in every Johnson & Johnson operation. This assures that we have a consistent approach, regardless of local regulatory requirements that may vary from country to country. Next, we assess compliance with these standards on an ongoing basis. At least once a year, every Johnson & Johnson manufacturing facility conducts a self-assessment. Compliance gaps are captured in a Management Action Plan (MAP), which consists of action items and dates for their completion. This document is approved by company management and executed by facility personnel throughout the year. In addition to the self-assessment, an external review of the site safety and health program is conducted every three years. During this joint-assessment, a health & safety professional from outside of the facility joins with site staff to review the same questionnaire that was used for the self-assessment. This review confirms the original findings or can identify new areas of concern. Any additional action items stemming from the joint-assessment are added to the MAP. This system is known as the Management Awareness and

Action Review System or MAARS. The MAARS approach has been very successful in helping Johnson & Johnson facilities identify and control their safety and health risks.

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[SY08-03]
An Integrated Business Strategy

Nowrooz H. Faraz

The Bahrain Petroleum Company (BAPCO), Bahrain

BAPC leadership strongly believes that extraordinary overall business performance starts with extraordinary EH&S performance. EH&S constitute a vital part of the Company management strategy and creating an incident and injury free work environment and positive EH&S culture can only be achieved through incorporating EH&S principles into the Company's activities from strategic planning to carrying out a routine maintenance.

Majority of BAPCO's EH&S management systems are voluntary and were adopted from the best international EH&S practices. EH&S management systems' custodianship is assigned to the Industrial Safety Committee (ISC) which is the overall in-charge of EH&S management within the organization. This committee is headed by senior leader and consist of senior management and assigned to lead the implementation, sustainability of EH&S progarmmes and to ensure they are aligned with overall business operation.

As a result of efficient and effective EH&S management, BAPCO now maintains more reliable processes and fewer injuries, ill-health and less negative environmental impact. Furthermore, our stakeholders are now advocating BAPCO's integrated approach to EH&S management.

Despite companies desire to achieve continuous improvement in safety performance, many of them saw their incidents rate and cost rise. Issues impacting accidental losses and safety are complex and run throughout the fibre of organisations. We must understand that none of these issue can be resolved by the introduction of another safety programme or the hiring of additional Safety professionals or the introduction of a new standard. We released this fact and were able to deal with this issue through an integrated EH&S approach.

What also released that we needed a process that draws on the diverse talents and experience of the entire organisation to a process that takes into consideration the Company strength and weakness and determines ways in incorporating EH&S into the knowledge beliefs and behaviour of all of its employees.

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[SY08-04]
Engaging Leadership and Gaining Business Value with Math-Proven Safety Leading Indicators

Joseph Stough

Syntex Management Systems, Inc., United States

Many of the same things that cause safety accidents in the workplace – e.g. insufficiently maintained equipment, inadequate worker knowledge, inefficient/ un-safe facility design, non-enabled and enabled behavioral deviations, etc. - are at the root of much operational inefficiency as well. Business leaders who truly commit to improving safety are inherently focused on strengthening their operation in each of these above areas.

Such leaders set the tone for a workforce "freed-up" to more openly talk about workplace hazards and other sources of operating inefficiency. These leaders also visibly demonstrate support for disciplined execution of risk reduction practices and timely completion of the corrective actions resulting from such activities. The result is a more efficient business operation that delivers not only a safer place for employees to work but also greater return for its financial stakeholders.

In this session, we will talk about how the combination of a vast data set with the appropriate statistical methods is leading to the identification of those "operational factors" that differentiate the best run and safest business operations from the rest of the world.

We will review how we are obtaining practically accessible and quantifiable data elements to study those "difficult to measure" areas such as Leadership Commitment and Reporting Culture as well as measurements of Risk Reduction Activity and Corrective Action Effectiveness. With a vast global data set of these measurements, we are applying a structured analytical process with specific statistical models which are helping to identify the key characteristics of those businesses that are able to sustain strong safety and business performance. We will then demonstrate how such leading indicator measurements are applied on monthly KPI reports

to compel Business Leaders to continuously monitor and improve those "factors" which are proven to result in both fewer safety losses and better overall business performance.
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[SY09] Creating a Holistic Approach to Safer and Healthier Workplaces

June 30, 16:00~18:30
Room: 403, COEX

Chairperson: **Leonard Sassano**,
Industrial Accident Prevention Association, Canada

[SY09-01]
Impact of Agricultural Certification Norms on Health and Safety in Central America

Dagoberto Rojas

ACSAL, Costa Rica

The agricultural companies in Central America are dealing with a transformation in their management systems been forced to fulfill Norms of Certification to be able to export their products (bananas, coffee, pineapple, melon, flowers) to the United States and Europe. The Norms that have contributed in the improvement of the working conditions of the agricultural workers are as follows: Rainforest Alliance, SA 8000 and Eurep Gap. This Norms are not limited to guarantee the quality of the products, their cleanliness and the environmental protection, although they also include the implementation of safety and health measures that guarantee good working conditions for the agricultural workers and their families. The ILO has offered support to the worker and employer Organizations regarding Safety and Health issues, so they can face in a competitive way these new challenges of the Certifications.

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[SY09-02]
A Global Approach in OHS Training

Denise Turenne

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In order to improve occupational health and safety, technical corrections to equipment and processes are not enough. One must also ensure that everyone, whatever its functions, assumes responsibilities related to prevention and OHS management. For example, a plant engineer must design ergonomic workstations, a supervisor must inspect his department, the human resource manager must, among other activities, conceive policies on violence or drugs in the workplace. Adding OHS responsibilities in job description is a new trend. Therefore, a suitable training must now be offered to the workforce.

The tool «Skills Profiles in OHS» which will be presented in this conference, lists OHS tasks and responsibilities for 14 critical job titles in organizations: the CEO, the OHS manager, the human resource professional, the operation manager, the supervisor, the maintenance manager, the plant engineer, the buyer, the accountant, the member of the joint health and safety committee, the OHS workers representative, the worker, the health service and the first-aid worker.

Furthermore, for each job title, a skill profile allows the user to pinpoint a person's training needs. OHS skills carry on knowledge (basic elements to know), know-how (technical or hard skills) and also knowledge - to be (attitudes to be adopted or soft skills).

The «Skills Profiles» allows to approach OHS training in a global manner, since it concerns many job titles and different types of desired skills. It also allows to insert occupational health and safety preoccupations in the roles and job descriptions of the entire personnel of an organization.

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[SY09-03]
Worker Values and Culture - Safety Communication that Goes Directly to Workers and Their Values

Robin Nicholas

Los Alamos National Laboratory, United States
Effective safety communication celebrates workers by honoring their values and culture. This values-oriented

communication goes beyond technical information. It relies not only upon what is communicated, but also upon how it is communicated. As a species, we reside in our knowledge - knowledge of who we are, what we know to be true, and our relationship to ourselves, our family, and our culture. This knowledge is intrinsic, experienced, and often non-verbal, and it informs our decisions, including our health and safety decisions. Effective communication engages this self-knowledge, giving workers the power they need to promote and advance their own safety and health. Key technical information must still be communicated, but only within the greater context of what is important to workers and what workers know. By engaging workers' values of life, family, and community, safety communication can bridge multiple cultures and educational backgrounds. Ultimately, safety at work has one priority - to serve the workers, ensuring that everyone gets home safe to their family and friends and that everyone has a safe place to work when they return. These core values and themes will be developed and explored through examples in both video and print. Worker values will be emphasized through the use of images, words, metaphor, and narrative. Other communicators' experience with values will also be presented and invited.

Key words: Worker values, culture, knowledge
(LA-UR-08-0226)

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[SY09-04]
Canada's Healthy Workplace Model as Implemented within IAPA

Joan Burton

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A model for a Healthy Workplace was developed by Health Canada and subsequently revised by Canada's National Quality Institute, and the IAPA (Industrial Accident Prevention Association). This model recommends that employers influence the health, safety and well-being of their employees through integration of three avenues:

- The physical environment in the workplace
- The organizational culture or psychosocial environment of the workplace
- The personal health resources of employees

This session will describe the model and provide examples of how the three avenues must be integrated in their application, rather than addressed as silos. In addition, examples of applications that IAPA has used internally will be described.

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[SY09-05]
Inspectorates Can Achieve Reductions in Work Injuries by Demonstrating and Promoting a More Holistic Approach to Safety and Health at Work

John Merritt

WorkSafe Victoria, Australia

Health and Safety Inspectorates can and should work with their communities to adopt a more holistic approach to safety and health at work, by changing their own culture first, and using social marketing principles to drive innovative communications, including award winning advertising and sports sponsorship campaigns.

WorkSafe Victoria is the Government regulator of health and safety at work for the State of Victoria, Australia. Victoria has a population of 5.2 million people, with 2.6 million workers in 240,000 workplaces.

The number of workers injured in Victoria is 25-30% fewer than in the other large States of Australia. In the last five years work related injuries have declined by 20%, and fatalities have declined by 30%. The number of workers injured in 2006/2007 was the equal lowest on record. In the next five years WorkSafe aims to reduce injury numbers by a further 20%. WorkSafe believes its success to date, and its future success, is dependent on leading change in how our community regards safety and health at work.

In 2007 the most successful and popular television advertising campaign in Australia did not feature any special effects, or any celebrities and it did not have a big budget. It was about health and safety at work.

Significant reductions in work related injuries can be achieved when our communities are supported to change the way they view health and safety at work, taking a more holistic approach, linking work back to home, and the desire we all have to care for and enjoy the people and things that are important to us. WorkSafe is successfully driving this change in a number of ways:

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[SY09-06]
Synergy at the Safety and Health Implementation

Ivan Majer

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Health and safety at work is a significant part of a community life, which affects an **economical** prosperity as well as a **cultural** level of the society. It covers **a wide range** of aspects from various areas, such as mechanics, law, medicine, hygiene, ergonomics, sociology, psychology, natural sciences, education etc. Health and safety at work is closely linked to many other working, social and political disciplines, too. Practical experiences show that the best results could be achieved mainly by taking into account **all the related aspects** and adopting an integrated approach for prevention. Successful health and safety management requires a **holistic approach**. It means simultaneous considerations and applications of all those many aspects affecting safety and health, relating to work. It means taking into account all related aspects, with **synergic effect**. That's why it could be called as a "**synergic approach**", too. The synergic approach means taking into consideration not only the various individual factors, but also the relationship between them.

The contribution introduces the synergic effect both particular areas acting together, such as:

- Quality – OSH – Environment
- Safety – Health – Wellbeing
- Man – Machine – Working environment
- Employer – Employees – State
- School – Family – Work

and other examples…

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[SY09-07]
Promoting Health at the Workplace: Case Study - Treasure Your Mind

Yang Huang Koh

Health Promotion Board, Singapore

AIM: This paper describes the national strategies Singapore has implemented to promote health at the workplace, and cites Treasure Your Mind as an example of an effective workplace health promotion (WHP) programme.

Rationale for WHP:

64% of Singaporeans aged 18 - 65 years work. Together with our rapidly ageing population and rising prevalence of chronic diseases, this threatens business profitability. The workplace is thus an excellent setting to promote the physical, social and mental health of our workers.

Development of WHP:

WHP started in 1984. Today, it embraces a holistic and integrated concept involving all areas influencing working life so that healthier choices become easier choices. The number of private workplaces having a comprehensive WHP programme has grown from 32.6% in 1998 to 58.7% in 2006. This represents 75.0% of the total private sector workforce compared to 26.0% in 1998.

WHP strategies are aligned with the Ottawa's Charter of:

- *Building healthy public policy* – Workplace Health & Sports Grant, HEALTH Award
- *Creating supportive environment* – healthy canteen, work life strategies
- *Strengthening community action* – Employers' Alliance for Mental Health
- *Developing personal skills* – Treasure Your Mind

Programme evaluation:

Programme effectiveness is evaluated against a set of key performance indicators. These include prevalence (%) of Singaporeans aged 18 – 69 years who exercise regularly, eat healthily, smoke, are obese, have hypertension, have diabetes, have high total blood cholesterol, suffer from Minor Psychiatric Morbidity. These are tracked through the 6-yearly National Health Survey and National Health Surveillance Survey.

Challenges:

These include addressing the social stigma attached to diseases such as HIV/AIDS and mental illness, responding to the needs of a rapidly ageing workforce and changes in the way work is being conducted, getting buy-in from small and medium sized companies, and customising programmes for different target segments.

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[SY10] Managing an Aging Workforce – Initiatives and Measures at the Macro Level

June 30, 16:00~18:30
Room: 201, COEX

Chairperson:
Marc De Greef, PREVENT, Belgium

[SY10-01]
Employability of an Ageing Workforce

Karl Kuhn
Federal Institute for Occupational Safety and Health (BAuA), Germany

[SY10-02]
A Joint OSHC-ILAPI Program to Promote the Safety and Health of Older Workers

Gert Albert Gust- Gajewski[1], **Dulce Estrella- Gust**[2]

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Older workers, persons occupationally active at age 55 and above, make up about 14 % of the Philippine labor force. Older workers are the driving force of productivity and competitiveness, custodians of the institutional know-how and serve as agents of transfer to younger workers of skills and values, including a safety and health culture. In the Philippines, occupational safety and health of older workers is receiving increased attention in research, the public debate and in private and public sectors' OSH programs.

Beyond usual age-related health challenges and aging processes, older workers are experiencing new occupational hazards and risks due to organizational, technological and lifestyle changes: new forms of stress, hypertension, exposure to chemicals go hand in hand with psychosocial challenges at work such as discrimination, reduced working conditions, forced retirement, or lack of training opportunities.

Ground-breaking research, legislation and specific programs in the public and private sectors initiatives have addressed many OSH-related concerns of older workers. Findings and recommendations are being presented to local and national stakeholders The present project has been designed to:

1) review safety and health concerns of older workers, OSH policies and programs with focus on five sectors in the Philippines: manufacturing, construction, maritime, ports, and the public sector;
2) discuss equality and discrimination concerns related to older workers and
3) recommend **best OSH policies and practices** on older workers in the public and private sectors.

The paper will contribute to the debate on social protection and provide technical safety and health basis for legislative proposals and specific safety and health programs in the workplaces, the latter in the context of the Zero Accident and health promotion programs in both private and public workplaces.

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[SY10-03]
Age-friendly Employment Practices and Attitudes

To be confirmed
Employers Representative, Belgium

[SY10-04]
Challenges of an Ageing Workforce

Marc Sapir
European Trade Union Institute for Research, Education and Health and Safety (ETUI-REHS), Belgium

[SY10-05]
Risk Analysis and Risk Assessment of Older Workers in the Health Care Sector

Lieven Carron[1], **Veronique De Broeck**[2]

[1]Prebes, [2]Prevent, Belgium

The health care sector is a vast sector, which comprises not only the hospitals but also the health centres, the service flats, the home care sector. Many people are working in this burdensome sector. The workload is not only caused by the activities but also by the work organisation and the work rhythm. Only a part of the workforce is working on a full time daily basis. The sector

needs 24 hour of care, including night work, weekend work and holidays. Physical and mental charges are caused by emergency interventions and call duties.

Workers in the health care sector are confronted with a number of risks such as infection risks, burn out, back disorders due to lifting and carrying of patients and psychological risks. Employment in the health care sector is not very tempting, especially not for young workers. As a result, there is a shortage of workers in the sector, which causes the existing workforce to work longer or to call for the help of volunteers. They are often older people, aged 50 and over, introducing new risks.

A reduction of the risks in the health care sector calls for an adequate training for all people involved in the sector.

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[SY10-06]
Improving Safety of Older Construction Workers in the United States

Sang Choi

University of Wisconsin-Whitewater, United States

The U.S. construction has a workforce that is consistent with the aging trend and is always ranked among the most dangerous occupations. The U.S. Bureau of Labor Statistics predicts that by the year 2015 there will be 55 million workers 45 years of age or older. This is approximately 40% of the U.S. workforce. However, aging of the construction workforce presents challenges to the ongoing effort to reduce injuries, illnesses, and fatalities. More research is desperately needed for site-specific safety issues and interventions for older construction workers. Thus, the goal of this study was to identify injury trends among construction workers as they relate to the age and activity of the worker. This study also analyzed workers' compensation cases in a major highway interchange reconstruction in the Midwestern United States. This study hypothesized that the safety issues of older construction workers are restricted to age-impaired activities and specific in terms of injury type. As this study indicates, older workers make a substantial contribution to construction in terms of skills and experience. Construction is a physically demanding process which has safety and health implications for both young and older workers. Where necessary, older workers should be re-trained and re-deployed in terms of work activities. Proactive preventative health interventions should be undertaken to sustain such older workers. By training, for example, the carpenter on hand/finger safety a company will benefit with lower lost time and less indirect costs. Safety professionals should review and amend work processes to accommodate the growing presence of elderly workers in construction. Further, older workers can do the work, but the composition of teams needs to realize a balance between youth and experience. The findings from this study could provide practical and cost-effective solutions to address the aging workforce at their organizations.

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[SY10-07]
Noise Induced Hearing Loss and Tinnitus - an Increasing Burden for an Ageing Workforce

Karl Koerpert

AUVA, Austria

Noise at the workplace is a major cause for hearing loss and tinnitus. Workers suffer from each of them but especially if both occur together. The age of a worker is a leading determinant for both complaints. Approximately 15% of the older workers suffer from tinnitus. The risk of acquiring tinnitus increases considerably if head injuries or ear diseases occur additionally to noise.
Tinnitus sufferers are faced with a lot of problems in their daily live at work. These problems range from reduced alertness, which raises the risk of having an accident, to problems when wearing hearing protection devices. Noise at work e.g. leads to a masking of tinnitus. If hearing protectors are worn this effect is reduced and the tinnitus is heard again. Tinnitus sufferers therefore tend to use hearing protectors less frequently and - being not aware of the consequences – they impair their hearing capacity.
A promising treatment is available in neither case. Therefore preventing measures are a primary necessity to avoid hearing loss and tinnitus. The solutions to this problem are:

The implementation of technical or organisational noise reduction measures to reduce the risk of hearing loss and tinnitus.
To inform workers about the individual possibilities to reduce personal noise exposure at work and leisure time.
To inform affected workers how to cope with their burden.

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[SY11] Promoting Effective OSH Management

June 30, 16:00~18:30
Room: 310, COEX

Chairperson: **Antonio Peñalosa**,
International Organization of Employers
Moderator: **Kris De Meester**, Federation of Enterprises, Belgium

[SY11-01]
Assisting Employers' Organizations and Their Members in Promoting a Safer and Healthier Working Environment

Antonio Penalosa

International Organisation of Employers, Switzerland

Organized by the International Organisation of Employers(IOE), the purpose of this symposium is to deliberate on the role of employers in advancing occupational health and safety at international, national and enterprise levels.

This presentation will highlight how concerted efforts at plant or enterprise level can make a real difference in promoting a safer and healthier workplace. It will also discuss how the IOE and its network of national employer federations from around the world have played an important part in the development and adoption of ILO instruments and how they have contributed to enhancing occupational safety and health issues. The presentation also discusses the case for employer involvement in occupational health and safety by highlighting the costs of unsafe work to the enterprise.

The presentation also supports the change of approach by the ILO from a prescriptive approach to standard setting in the area of OSH to a non-prescriptive one, which led to the adoption in 2006 of the Promotional Framework for Occupational Safety and Health Convention. This Convention defines provisions for assisting countries in developing the national and enterprise tools to promote the establishment of national OSH systems and programmes, the building of preventative safety and health cultures and the application of a systems approach to the sound management of OSH with the aim of continuous improvement of the safety and health. These efforts have been complemented by the IOE's Statement on OSH. Furthermore, a guidance tool to assist employers' organizations and their members is being developed by the IOE. The full participation of employers in the processes related to the development, implementation and continual improvement of their national OSH system is essential to building national capacities in this area.

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[SY11-02]
Korean Employers' Approach to Occupational Safety and Health

Ho-Sung Lee

Korea Employers Federation, Korea

This presentation will highlight :
Occupational accidents and social security in Korea :
•
Trends in occupational accidents.
•
The Industrial Accident Compensation Insurance (IACI).
Safety and health management system of enterprises :
•
Organization and staff.
•
Labour-management cooperation system.
Safety and health promotion :
•
Statutory prevention activities.
•
Voluntary activities by enterprises.
Occupational accident prevention policy of the Government.
Framework for social dialogue :
•
Occupational Safety and Health Policy Deliberation Committee (OSHPDC)
•
Korea Tripartite Commission.
Role of the employers' organization :
•
KEF's efforts to improve safety and health at workplaces.
•
Safety and Health Committee of Enterprises (SHCE).

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[SY11-03]
The Overriding Priority - Safety Management in General Motors

Michael Taubitz

General Motors Corp., United States

GM's Safety Policy, written in 1994 by top executives of the corporation, began GM's cultural journey leading to the achievement of benchmark status in safety performance. The policy not only established safety as the overriding priority, but it marked the beginning of senior leaders taking direct and personal responsibility for employee safety. The policy reads.....

We are committed to protecting the health and safety of each employee as the overriding priority of this Corporation. There will be no compromise of an individual's well being in anything we do. The implementation of actions to help our employees realize a healthy, injury-free environment is a leadership responsibility. Continuing support of this effort is the responsibility of everyone. We will lead the General Motors team to ensure that we protect the well being of every member.

This presentation highlights the dramatic reduction in injury and illness rates along with describing GM's journey. What GM did and how they did it will be discussed, emphasizing the role and importance of leadership.

Lastly, the presentation will link what GM has done with respect to the ILO OSH-MS 2001 Guidelines, ILO Convention 187 on the Promotional Framework for Safety and Health and the 2007 IOE Statement on Safety and Health. GM's lessons learned can be used by any leader desiring to better protect the health and well-being of their employees. *"There will be no compromise of an individual's well being in anything we do….. and "The implementation of actions to help our employees realize a healthy, injury-free environment is a leadership responsibility….."* are two important foundations guiding actions in developing countries.

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[SY11-04]
Health, Safety & Prevention at the Heart of the Veolia Water Labor Policy

Frederic Goetz

Veolia Water, France

For years, we have been aware that the working world is changing, that work methods are becoming increasingly complex, that working conditions are rapidly transforming, and that modifications or the appearance of new types of risks are developing. That is why Veolia Water has engaged a participative approach to managing prevention, health and safety.

For several years, Veolia Water has applied a new approach to occupational health and safety, making it a full part of the company's overall management. Methodologies have been established enabling a structured internal organization to efficiently manage the protection of people and property – in other words, to convert principles into preventive measures adapted to its service business.

The key competencies presented will be the following:

- The program takes into account every national regulation in 60 countries, while complying with the International Labor Organization's guidelines.
- It was drafted on a participative basis, in association with the employees, who are the core of our business through their experience and know-how.
- It has made it possible to capitalize on experiences and to standardize them.
- It has encouraged our clients, suppliers, sub-contractors, etc. to also incorporate the rules of the Veolia Water prevention policy.
- It has fostered the development of on-the-job health programs that work as powerful levers in behavioral change.

The presentation will be composed of PowerPoint visuals accompanied by a hard-copy document for subsequent referral. The approach I plan to use to capture participants' interest is as follows:

- Open questions asked to the participants on managing situational disparities.

Slides and messages on the points mentioned above.

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[SY11-05]
Arcelor Mittal's Global Policy on Occupational Safety and Health

David Sadler

ArcelorMittal, United Kingdom

ArcelorMittal has operations in more than 60 countries, both industrialized and developing, with different cultures and legal systems, employing over 300,000 workers.

ArcelorMittal is committed to the health and safety of all employees,
both on and off the job, in order to become the most admired steel company.

After an introduction to ArcelorMittal's steelmaking activities, this presentation highlights the company's Occupational Safety and Health Policy as well as its partnership with the trade unions in meeting its commitment that *"No other priorities shall be higher than health and safety".*

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[SY12] Setting Research Priorities for Interventions on Safety and Health at Work

June 30, 16:00~18:30
Room: 311BC, COEX

Chairperson: **Stephen Matlin**,
Global Forum for Health Research
Moderator: **Evelyn Kortum**,
World Health Organization

[SY12-01]
How Global Research Sets Priorities for Interventions at Work

Marilyn Fingerhut

National Institute of Occupational Safety and Health (NIOSH), United States

Estimation of the global (and national) burden of disease due to occupational risk factors is carried out to influence policy makers, governments, international and national bodies, academics, employers, and unions to reduce risks at work. The World Health Organization recently carried out a study that analyzed in detail the contribution of five occupational risk factors to the global burden of disease. These five factors accounted worldwide for an estimated 37% of back pain, 16% of hearing loss, 13% of chronic obstructive pulmonary disease, 11% of asthma, 9% of lung cancer, 8% of injuries, and 2% of leukemia. Virtually all cases of silicosis, asbestosis, and coal workers' pneumoconiosis were work-related. The five occupational risks accounted for about 850,000 deaths and 24 million years of healthy life lost each year. The deaths constitute less than 40% of the 2.2 million deaths estimated by the International Labor Organization to be due to work. Data limitations, primarily in developing countries, prevented the inclusion of other major occupational risk factors and indicate underestimation of the impact of workplace risks.
This presentation will assess priorities and types of research and other responses stimulated by global burden studies. Both WHO and ILO have Global Plans of Action for Workers' Health, endorsed by Member States. National Plans have been developed by some countries. Since research in developed countries has answered many questions about the *causes* of work-related illnesses and injuries, research in the developing world can be tailored to local conditions. Intervention-effectiveness research and cost-effectiveness research focus on solutions. A new global priority is evaluation research that implements and assesses simplified approaches to management of chemicals and other risks in small and informal workplaces. Partnerships of experts in developed and developing nations to selectively focus on approaches suitable to the developing nation contribute to success.

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[SY12-02]
Research Priority Setting in Occupational Safety and Health: Methods, Approaches and Results

Sergio Iavicoli[1], **Bruna Maria Rondinone**[2]

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The past decades have witnessed a rapid evolution of the labour market: introduction and development of new working procedures involve use of new working procedures. Global competition on one hand pushes enterprises to a continuous updating to new parameters to ensure product and service quality and on the other makes workers' health and safety promotion process increasingly complex.
Hence a methodology is necessary to guarantee identification of research priorities in OSH. In the past 15 years, there have been several studies, though carried out with different approach and methodology, that developed a prioritization process of OSH issues with the aim of achieving an optical allocation of the poor economic resources.
A comparative critical analysis of the most important studies highlights the Delphi method as the privileged investigation technique. One or more topics are proposed to a group of experts, who then rate them through an iteration process, in successive rounds, until they reach a consensus, with all the replies remaining anonymous.

Delphi proves to be a better technique since it actively involves participation of all the subjects working in a given sector: for OSH not only of researchers but also of final users of intervention actions and stakeholder. Moreover, it takes account the intrinsic features of OSH involving multidisciplinary factors.
The most delicate part of the Delphi procedure is set up of the panel of experts, since it is not covered by the sample theory guarantees. To make sure the results are reliable and unbiased, the panel must be highly representative of all the parties involved in the study and then be assessed as well.
The importance of prioritization process in OSH is confirmed if the outcoming scientific and economic impact in the different countries is assessed.
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[SY12-03]
Research Priorities Identified at the 7th Pan African Congress on Occupational Health

Benjamin Fayomi

Cotonou University, Benin

• Background
The 7th Pan African Congress on Occupational Health provided the opportunity for exchange among researchers, practitioners, policy makers and other actors in the prevention of occupational hazards affecting Africa and outside Africa.

During the congress, experiences and research results were presented and discussed in sessions, panels, workshops, symposia, seminars, etc.

• Objective
The present paper aims to identify the priorities that emerge from the works that were very much appreciated by the public present in Cotonou.

• Method
Below are the main priorities based on:
- Common themes;
- Importance of the problems raised by the studies that is, the threat of the problems weighing on the majority of workers;
- The inadequacy between the problems and the proposed preventive solutions.

Based on these items, we identified five main research priorities that we classified into three categories.

.Results

Category 1: Studies on infectious risks at workplace

This category has two priorities:
- Blood Borne Accidents
- HIV and tuberculosis in the workplace in Africa

Category 2: Studies of the informal economy

Here again we have two priorities:
- Knowledge on occupational hazards in the informal sector
- How to organize primary health care in the sector

Category 3: Studies on productivity enhancement through prevention.

- Knowledge of the working environment in Africa: physical economy and social

Conclusion

These priorities derived from the expression of various African researchers, in particular, should be taken into account and be supported for the development and the well-being of Africa.

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[SY12-04]
Researching with People Working at the Margins

Kevin J. P. Maguire

Nottingham Trent University, United Kingdom

Much of occupational health and safety research is a measurement of the processes with which some standardised worker engages. For example, we measure ergonomic variables of their work station, the microclimate they breathe, their hours lost, etc.. For many workers (perhaps globally, it is the majority), the 'workplace' is a less clearly defined space with all sorts of people working all sorts of hours. For one such group, those 'in the margins' (e.g. cleaners, casual labourers), their experience of work, what it means to them and its effects on their health and safety are rarely examined.

Marginal workers, often women, come from diverse ethnic and cultural backgrounds and have tenuous work-related support mechanisms. While there is supporting evidence from other research relevant to marginal worker health, we

have insufficient research on the actual conditions and processes by which they come to suffer harm.

This paper considers three key aspects to the research that is needed in order to understand the processes and, hence, to improve their health and safety. We need to:

- promote greater analysis of often extant data (e.g. accident report data) which identifies gender and sometimes ethnicity; where there are deficits, research is needed to collect and analyse such data.
- encourage qualitative approaches, including phenomenological and reflexive methodologies; these will help us to understand their framing and experience of work and health and to identify the experienced conditions and forces affecting health.
- clarify social processes within and around the workplace which result in harm.

Anticipated implications for policy and practice include consideration and control of employment tenure, organisational efforts to correct and bridge gaps in worker understandings (including greater acceptance of responsibility for training), better use by government agencies of the workplace to promote health, and more targeted activity by enforcement agencies.

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[SY12-05]
Comments on Power Structures and Community Approach in Occupational Health Research

Sukanya Rangamani
Community Health Cell, India

[SY12-06]
Comments on Occupational Health Research Priorities in Latin America

Jorge Morales Camino
Procter & Gamble Latin America, Mexico

[SY13] Future Challenges for Safety and Health in the Construction Industry

June 30, 16:00~18:30
Room: 104/105, COEX

Chairperson: **Karl-Heinz Noetel**,
German Employment Accident Insurance Fund for the Construction Industry (BG BAU), Germany

[SY13-01]
Work-Related Accidents in the Construction Industry in Minas Gerais State, Brazil, From 2000 to 2005 - A Critical Appraisal

Celso Salim

Fundacentro, Brazil

Objectives: The purpose of this study is to investigate the trends and differentials of workplace accidents registered in the construction industry in Minas Gerais State, Brazil. In addition, it intends to identify some restraints to more realistic quantifications and characterizations of workplace accidents, as well as to discuss possible alternatives to overcome them.

Material and methods: A critical view of statistics about fatal and nonfatal occupational accidents originated from two sources: RAIS (Annual Relation of Social Information – Ministry of Labor and Employment) and AEAT (Yearly Workplace Accidents Records – National Institute for Social Security). The intent was to measure differentials about the accident results – i.e., temporary incapacity, death, disability and social security benefits, loss of man hours, accident description, ages, gender, level of education and occupation – by a selection of specific variables of both data sources, and geographical cross-cut analysis separated into themes related to types of accidents.

Results: From 2000 to 2005, workplace accidents in the construction industry kept a relatively high level. Except for 2001 and 2002, when it fell, this share remained practically unchanged in the period. Yet, this fall may not reflect larger outsourcing and/or an increase in informal work relations. Even so, its figures, when transformed into accident and death rates or, more specifically, in lethality rates, places the sector in an uncomfortable rank. Within the range of

liquidated accidents, despite relatively decreasing in the cases of permanent disabilities due to workplace accidents, presented a larger relative share of such cases.

Conclusion: The data found in these records can be interpreted and their range can be broadened. Even keeping the particularities of construction industry in a regional scale, this work shows a concrete analysis followed by propositions of intervention to achieve better workplace accident statistics in Brazil.

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[SY13-02]
See and be Seen

Horst Leisering

German Employment Accident Insurance Fund For The Construction Industry (BG BAU), Germany

Background: When using earth-moving equipment, serious and fatal accidents happen time and again, because people working around the machine are not noticed early enough by the machine operator and are hit or run over.

The visibility on earth-moving equipment has improved in recent years on account of better design. Nevertheless, so – called "dead angles" or "blind spots" remain in the vision field of the machine operator for design – related reasons. These are areas that cannot be seen from the operator's cab.
The risk of accident can be reduced significantly by:

- machine properly equipped for the work environment;
- adopting safe working methods;
- training of (ground) staff and machine operators to safe behaviour.

In the presentation, the following themes are to be presented:

- the future increased requirements on the visual field of machines (DIN EN 474 new and ISO 5006 new),
- the possibilities of improving visibility,
- the adoption of safe working methods,
- the possibilities to train (ground) staff and machine operators to safe behaviour
- the"Feedback Method", a tool for accumulating users' knowledge and experience , structuring it and making it available not only for standard-setters, but also to obtain basic information in order to improve training methods.

Depending on state of progress, the action planned by BG BAU "See and be seen" can be presented on that occasion.

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[SY13-03]
Improving Health and Safety for SME in Construction Using the Concept of "Learning Organizations"

Joachim Larisch[1], Wolfgang Ritter[2], Stephanie Poeser[2]

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The construction sector is economically important for Europe, and in 2002 nearly 12.7 million people were employed in this sector (7.9% of the EU-15 workforce). Working in construction still is very risky for European workers. Although there had been a considerable decline in non-fatal occupational accidents between 1994 and 2001, the incidence rate is about 7% as compared to about 4% in manufacturing. According to German statistics, most of the nonfatal accidents occur due to falls and loss of control during the use of machinery. In addition to physically demanding work tasks increasing time pressure and a high degree of professional skills add pressure to workers in construction. Small and medium sized enterprises (SME) have considerable problems in meeting the necessary health and safety requirements when applying for contracts. In a project funded by the European Union since 2004 a regional network "LERNBAU" in Bremen (Germany) has been established in order to develop procedures and instruments to improve health and safety. An internet supported knowledge base has been developed for managers, foremen and workers of eleven SME active in civil and underground engineering, including the labor inspectorate, the Berufsgenossenschaft (Employers' Liability Insurance Association), and three ordering firms.
Using the concept of "learning organizations" procedures and instruments to improve
communication and cooperation among SME and between ordering firms and contractors have been developed, including OSH requirements in tenders and supervision during the construction process. Interviews with workers, managers, and external experts helped to define priorities in providing OSH information and establishing an internet platform accessible for members in order to share practical

solutions. Additionally, workshops are organized in order to develop a set of specific OSH requirements in tenders. Thus, SME are assisted in meeting OSH standards which is also economically important in a highly competitive business sector.

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[SY13-04]
Review of the Effectiveness of Interventions for Preventing Injuries in the Construction Industry

Marika Lehtola[1], Henk F. Van Der Molen[2], Jorma Lappalainen[3], Peter L. T. Hoonakker[4], Hongwei Hsiao[5], Roger A. Haslam[6], Andrew R. Hale[7], Jos H. Verbeek[8]

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Background Construction workers are frequently exposed to various types of injury inducing hazards. A number of injury prevention interventions have been proposed, yet the effectiveness of these is uncertain. This is why a systematic review that evaluated the effectiveness of interventions for preventing occupational injuries among construction workers was conducted.

Methods Seven databases were searched, through June 2006, for published findings from injury prevention in construction industry. Acceptable study design included randomized controlled trials (RCT), controlled before-after studies (CBA) and interrupted time series (ITS). Effect sizes of similar interventions were pooled into a meta-analysis.

Results Of 7522 titles found, four ITS studies and one controlled ITS study met the inclusion criteria. The overall methodological quality was low. We found no indications of publication bias.
Findings from a safety-campaign study and a drug-free workplace study indicated that both interventions reduced the level and the trend of injuries significantly. Three studies that evaluated legislation did not decrease the level (ES 0.69; 95% CI -1.70 to 3.09) of injuries and made the already downward trend of injuries less favorable (ES 0.28; 95% CI 0.05 to 0.51).

Conclusions We found limited evidence for the effectiveness of a multifaceted safety campaign and a multifaceted drug program, but no evidence that legislation is effective in preventing non-fatal or fatal injuries in the construction industry.

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[SY13-05]
Safety Culture among Subcontractors in the House Construction Industry

Phil Wadick

Monash University, Australia

This article sketches a portrait of the safety culture of subcontractors who work in the domestic housing industry in Australia. Ethnographic data was gathered primarily from a short survey of 150 subcontractors, in depth interviews with 11 subcontractors from various trades, document analysis, OHS course evaluations, informal conversations and investigator diaries. It was found that, despite the high rates of injury and disease in the construction industry, construction workers want to be safe at work and they trust their own safety knowledge developed over years of involvement in the industry. They have a poor understanding and appreciation of OHS legal requirements and accept that construction work is dangerous. They tend to think of safety as common sense and often blame the injured worker for not being careful enough. Safe behaviours are constrained by a competitive industry that puts costs before safety. Enforcement strategies fail to take the culture of the industry into account and are being met with a form of passive resistance. The three main areas that subcontractors believe need addressing to improve safety on house building construction sites are the critically important role that the builder plays in organising the construction process, the interdependence of the different trades, and manual handling. Recommendations are made for government policy and training development.

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[SY13-06]
Challenges in Health & Safety (H&S) Management in Large Scale Construction Projects

Volkan Kurt[1], Firat Sukru Eker[2]

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This paper focuses on highlighting the fundamental challenges and proposals for solutions in health and safety (HS) management in large scale construction projects. The study is based on detailed analysis of HS management of five different large scale construction projects that are:

- LNG plant construction
- Motorway construction work including 6-km of tunnel construction
- Crude oil pipeline construction
- High-speed train railway construction
- Subway construction

The outputs of the analysis are summarized within the structure of following aspects:

- Design management
- Organizational structure
- Training, communication and participation management
- Operational management
- Performance management

The results of the analysis demonstrate that these challenges can be categorized as follows:

- Difficulties in implementing a project based HS management system
- Organizational challenges due to cultural differences, incompetence and high turnover rate of employees
- Insufficient management of risks both in planning and implementation phases
- Insufficient budgeting and financial management of HS issues including resource allocation
- Lack of HS competency of sub-contractors
- Lack of creating effective HS culture and involvement of people,
- Lack of awareness and adequate training arrangements for project managers and employees

Based on the findings of the analysis, such solutions are proposed to improve the performance of the management tools and their implementations. It has to be emphasized that successful HS management in large scale construction projects should be based on systematic and continual approach of managing risks from design to completion by providing effective communication environment that focuses to minimize the cultural differences under continual management commitment and competent supervision.

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[SY13-07]
Challenges of Construction Safety and Health in the United States

Xiuwen Sue Dong, Yurong Men, Alissa Fujimoto, Knut Ringen

CPWR-Center for Construction Research and Training, United States

CPWR - The Center for Construction Research and Training launched its construction safety and health research program in 1990, when the organization was known as The Center to Protect Workers' Rights. CPWR, funded by the U.S. National Institute for Occupational Safety and Health (NIOSH) and several other U.S. federal government agencies, focuses on construction safety and health research and training, medical screening, and related safety and health services; serving construction workers, unions, contractors, owners/users, and other industry organizations. This report is based on the recent findings by the CPWR Data Center. The report profiles the U.S. construction industry and its workers, describes the trends in fatal and nonfatal work-related injuries among U.S. construction workers in the last 15 years. In addition to injury statistics, this report discusses the changing demographics and challenges for the U.D. construction safety and health in the future, such as aging construction workforce, increasing immigrant employment, and how to promote best practice and improve safety and health cultures. The statistics used for this report are obtained from several large nationally representative datasets collected by the U.S. Census Bureau and the Bureau of Labor Statistics, including the Census of Fatal Occupational Injuries, the Survey of Occupational Injuries and Illnesses, the Current Population Survey, and the County Business Patterns. SAS version 9 is used for the data analysis.

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[SY13-08]
Slips and Falls. Their Relevance to the Construction Industry

Stephen Thorpe, Paul Lemon, Kevin Hallas

Health and Safety Laboratory, United Kingdom

Slips and falls are the biggest class of accidents reported to the United Kingdom's Health and Safety Executive (HSE). In addition, many other accidents reported, for example, as falls from height or workplace transport accidents are often initiated by simple underfoot events. This must be a considerable burden on the construction industry. More accurate and more easily understood information about how surfaces perform in terms of slip resistance would help to address this problem. This requires the development and use of accurate and reliable tests and test methodologies to measure friction. Complementary supporting information, to help the end user interpret and understand the test result, is also very important.

Recent work in the Health and Safety Laboratory (HSL) will be discussed. We will comment on ongoing work to develop new methods of test and refinements to existing methods, including an update on work in various European Standards Committees with an interest in slip resistance.

The role of footwear is also very important in controlling slip risks. We will present our ongoing work and thinking in this area, again providing an update on work in the relevant European Standards Committee.

Profiled surfaces, often used on stairs, ladders and walkways (including significant use in vehicles) will also be discussed. Methods that can be used to characterise such surfaces and a guide on how to interpret test results will be described.

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[SY14] Sharing Best Practices for a Safer and Healthier World

June 30, 16:00~18:30
Room: 320, COEX

Chairperson: **Mark Vergnano**, DuPont, United States
Moderator: **Erich Parker**, DuPont, United States

[SY14-01]
Focus on the People: Personae

Pedro Rodrigues[1], Juan-Carlos Escolar[2]

[1]Sonae Sierra, [2]Dupont Safety Resources, Portugal

Sonae Sierra is an international shopping centre specialist with a groundbreaking PERSONÆ project which will be the focus of this presentation. PERSONÆ is part of Sierra's aim of achieving the best Safety & Health standards and practices in the shopping centre sector. The PERSONÆ project focuses on visible leadership commitment and responsible behavior on the part of each individual to achieve a target of zero accidents. The project reaches out beyond all levels of the company and fully integrates a wide cross-section of stakeholders – including staff, contractors, tenants, suppliers, visitors and the surrounding community.

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[SY14-02]
Best Practices in China

Rongfang He

China National Petroleum Corporation, China

CNPC serves as China's largest producer and supplier of crude oil and natural gas, holding a dominant position in domestic petroleum production, processing, and marketing sectors. Its operations cover a broad spectrum of upstream and downstream activities, There are 1.4 million employees working for CNPC. We believe that people and the environment are our two most important resources. Therefore, it is one of our top concerns to protect the environment and safeguard the health and safety of our staff. This presentation will outline the best practices CNPC has instituted to protect its employees from hazards in the workplace as well as protect the environment.

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[SY14-03]
Behavioural Safety Experience at Hindustan Unilever, India

Bakul Dave

Hindustan Unilever Limited, India

For several decades, many organisations in the world thought that workplace safety can be achieved by

instituting engineering controls (e.g. fire control, machine guards, interlocks) combined with management systems (e.g. OHSAS 18001, ISRS, BS 5500). Not long ago, we at Hindustan Unilever India also belonged to this old school of thought. Our experience over time showed that controls and systems are as good or as bad as they are run by people. It is people whose actions and behaviours decide whether they will be safe or not.

Since 2003, we have been on a "behavioural safety journey" continuously focusing on people behaviour, reinforcing and appreciating safe ones and correcting unsafe ones on an ongoing basis. Experience tells us that this is a journey with milestones but no destination. The key cornerstones in our journey that now contribute to behavioural transformation across the organisation are:

- Leading from top and a safety organisation to support safety efforts at all level
- Visible felt leadership – safety in annual work plans for all managers
- Creating a safety vision and embedding safety principles
- Behavioural engagements by line organisation across all functions
- Safety evaluation of all business processes
- Incident investigation, analysis, actions and closing
- Progressive safety rewards/recognition and discipline
- Use of "leading" vs. "lagging" indicators.

As we practice safety on a day-to-day basis we realized it is a long journey to embed each of the above across the organisation. And this comes through only with continuous engagement, two-way communication, effective implementation of standards and creating a culture of "I care for you- you care for my safety" leading eventually to "Everyone takes care of each other!"

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[SY14-04]
Driving Health & Safety Performance Improvement - "Inspired by a Passion for Excellence"

Neil Mc Farlane

Firmenich, Switzerland

Firmenich is a world leader in the discovery and creation of perfumes, flavors and ingredients for perfume, cosmetics, household products, food & beverage. In October 2004 Firmenich published and communicated its operating philosophy on the management of Health, Safety and Environment, with the issue of the Health Safety & Environmental Charter. Every employee received a copy of the Charter, which is published in multi-language versions. Traditionally, the approach had been a one whereby the HSE function was seen as totally responsible for the management and performance in this area. Recognising and accepting that line management should be held responsible and accountable for HSE, with functional support from the HSE team, was a step change in thinking. This presentation will talk about Firmenich's safety performance improvement journey and how it is changing the safety culture of its organization to attain world class results.

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[SY14-05]
Protecting What Matters Together Through Best Practices

Jim Weigand

DuPont, United States

DuPont offers a wide range of products and services for markets including agriculture, nutrition, electronics, communications, safety and protection, home and construction, transportation and apparel. The company believes safety management systems are an important strategy in improving business performance. During the last decade, the total number of incidents at DuPont, including injuries, illnesses, waste and emissions has decreased by 60 percent. Fewer injuries mean DuPont saves millions of dollars a year in reduced insurance premiums and indirect costs, such as lost worker productivity, missed deliveries and overtime. Companies and organizations around the world — across a range of industries and affiliations — are beginning to realize this link. This presentation will give examples of how this is happening at DuPont and in other companies with specific reference to collaborative leadership

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[SY15] How Innovative Communications and Transnational Cooperation can Make a Difference - the European Experience

June 30, 16:00~18:30
Room: 103, COEX

Chairperson: **Jukka Takala**, EU-OSHA
Moderator: **Glenis Willmott**, European Parliament

[SY15-01]
The European Union's Health and Safety at Work Strategy 2007-2012 And the European Parliament's Position

Glenis Willmott

European Parliament, United Kingdom

Glenis Willmott MEP was the European Parliament's Rapporteur on the EU Health and Safety at Work Strategy 2007-2012. She will give an overview of the rationales for cooperation at EU level for OSH and report on the outcome of discussions leading to the European Parliament's position on the Strategy, focussing on key issues including the need for effective implementation and enforcement and action in the face of new and emerging risks.

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[SY15-02]
The 2007 - 2012 Community Strategy on OSH - Objectives and Instruments

Jose Ramon Biosca
European Commission, Luxembourg

[SY15-03]
Campaigning Strategy and Success Factors

Sabine Sommer
European Agency for Safety and Health at Work, Spain

[SY15-04]
Campaigning Strategy and Success Factors

Andrew Smith[1], Sabine Sommer[2], Jukka Takala[1], Glenis Willmott[3], Joanna Janecka[4], Peter Rimmer[5], Gregor Doepke[6], Robert Lang[7]

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The world's professional safety and health community shares the challenge of making workplaces safer, healthier and more productive by promoting a risk prevention culture. This is challenge enough at the national level, but it becomes even bigger when we have to communicate knowledge and experiences across national boundaries through different languages and in diverse cultures.
But following a trans-national approach can provide an opportunity to reach a large number of people with a consistent message and practical solutions.

By taking the experience of the European Agency for Safety and Health at Work (EU-OSHA) with its pan-European awareness-raising campaigns, based on the Community Strategies on Health and Safety at Work, as a starting point the session will:

- Show how simple concepts like networking, partnership, in particular with the social partners (tripartism), transnational cooperation and pooling of information resources can be turned into powerful tools at the workplace level to address health and safety concerns and to promote a prevention culture.
- Evaluate the role that the Agency's awareness-raising campaigns play in the implementation of the Community occupational safety and health strategies.
- Demonstrate the use of different media and communication techniques.
- Illustrate the benefits of combining a central organisation with decentralised delivery.
- Show how new countries, their diverse cultural backgrounds and disparities in the development of a prevention culture can be successfully integrated into a given framework.
- Highlight international practices and examples to facilitate exchange and benchmarking.
- Analyse success criteria and share lessons learnt.
- Assess the campaign's potential to address new types and new combinations of occupational risks arising from the changes in the world of work.

Seek synergies and partnerships with other regions of the world.

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[SY15-05]
Getting the Message across: An Innovative Media Initiative within the "Lighten the Load" Campaign

Joanna Janecka, Wiktor M. Zawieska

Central Institute for Labour Protection - National Research Institute, Poland

The "Stand up!" media campaign was carried out as part of the "Lighten the Load" European campaign. It tackled the issue of musculoskeletal disorders caused by, among others, working in the sitting posture. The campaign was co-ordinated in all EU countries by the European Agency for Health and Safety at Work. In order to gain the attention of the target audience and to apply effective means, a media campaign was designed. Its contents and visual form focused on the spine as the part of the human body most exposed to the consequences of sedentary work and life styles.

The visual form of the campaign's message, designated for display in city transport (stickers on the backs of seats in trams and buses, and posters with a picture of the spine) was based on the direct association between sitting in those means of transport and one of the reasons for musculoskeletal disorders. The media strategy assumed the target audience's intensified perception in the morning, when commuting to work, and in the first hours of work, thus "media mix" advertising was selected: the combination of outdoor advertising displayed in city transport in 13 largest cities in Poland, articles and advertisements in popular newspapers and banners on Internet websites.

In order to assess the effectiveness of the "Stand up!" campaign and to verify the appropriateness of the selected means and information channels, the target audience of the campaign was polled. Polling was carried out with the most traditional technique used in quantitative surveys, i.e., a questionnaire. It comprised interviews with respondents in a street survey in the largest transport hubs in those cities where the campaign was carried out. An interpretation of the survey's results showed that the target audience was properly identified and the adopted visual creation proved efficient, reaching substantial audience.

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[SY15-06]
Experiences From the Social Partners

Kris De Meester
Federation of Enterprises in Belgium, Belgium

[SY15-07]
How Innovative Communications and Transnational Cooperation Make a Difference - The European Trade Union Experience

Marc Sapir

European Trade Union Institute for Research, Education and Health and Safety (ETUI-REHS), Belgium

To address health and safety at work from a transnational perspective, trade unions and experts working with them are facing a number of challenges in particular the diversity of situations and the growing numbers of workers with precarious contracts.

Considering the importance given by the European Trade Union Confederation (ETUC) to the improvement of workers situation, the ETUC developed a strategy for improving workers and their representatives' access to information in order to make the public debate centred on workers experience and their demands.

In 1989, the Trade Union Technical Bureau (TUTB) a specialized Association was set up in Brussels by ETUC to fulfil this objective. A number of information products and channels of information between the European and national level were developed. The Health and Safety Department of the European Trade Union Institute continues this work by disseminating expertise among workers' representatives in order to help them contributing to the improvement of working conditions.

Giving workers experiences dealing with health and safety in the European political and technical arena has been a major achievement. The EU-OSHA campaigns launched in 2000 have provided a new opportunity for the development of transnational trade union activities and awareness campaigns.

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[SY15-08]
Innovative WSH Communications in Singapore

Linda Dorothy De Mello

Workplace Safety and Health Advisory Committee, Singapore

Singapore's workplace safety and health (WSH) scene underwent a major makeover on 10 March 2005 with the launch of a new WSH framework to improve WSH standards and safety outcomes. To support the framework, a new Workplace Safety and Health Act (WSHA) was enacted and a 10-year national WSH strategy, the WSH 2015, was developed to guide the efforts of all stakeholders. Singapore's WSH communication strategies are closely aligned to the transformation of the WSH landscape to support, promote and publicise the changes and to raise WSH awareness at all levels. Having to target workers, safety professionals, employers and the community-at-large, calls for innovation in communication strategies. From the message to the medium that is employed the Singapore government has veered from the norm by experimenting new ways to achieve greater visibility.

Current outreach avenues include new media such as e-mails, and websites as well as traditional media such as radio and print where innovative messaging is employed. Singapore streets have also been transformed into a canvas for WSH messaging with bus and bus stop ads, street lamp banners, roadshows held in containers and creatively designed hoardings at worksites. Alongside this, WSH events and campaigns continue to engage creativity in not only conceptualisation and execution but also in venue selection from malls located in the heart of the city, to industrial estates and workers' dormitories in the outskirts. Strong alliances have been built with trade associations, businesses, foreign embassies and even the local media to partner the government's efforts and to provide added communication avenues for outreach efforts. In fact the strong ownership of WSH by the industries has helped to shape Singapore's safety and health landsacpe. These out-of-the-box approaches to communication have been instrumental in the heightened awareness of WSH in Singapore leading to improved safety and health performance.

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[SY15-09]
No Celebrities No Attention! How to Integrate Famous Personalities into Your Campaign

Gregor Doepke

German Social Accident Insurance (DGUV), Germany

[SY15-10]
Communication for Developing a Culture of Risk Prevention: Experience of Communication at CNSS/ CPFACE + a Film

Dakissaga Sibiri Raphael
National Social Security Fund, Burkina Faso

[SY15-11]
Listen Up! Raising Awareness: Campaign Techniques

Peter Rimmer
PRPR Independant Communications Ltd., United Kingdom

[SY15-12]
Listen Up! Raising Awareness: Campaign Techniques

Robert Lang
National Accident Insurance Fund (SUVA), Switzerland

[SY16] The Impact of Changing Working Conditions on Workers' Health

June 30, 16:00~18:30
Room: 334, COEX

Chairperson:
Su ill Lee, Korean Society of Occupational & Environmental Medicine, Korea

[SY16-01]
The Influence of Different Attentional Demand and Individuals' Cognitive Failure on Workload Assessment and Psychological Functioning

Adel Mazloum[1], Hiroyuki Izumi[2], Yoshiyuki Higuchi[3], Masaharu Kumashiro[2]

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Attentional demands and individual's cognitive failure are hypothesized to be determinant factors for workload assessment and job analyses, although previous researches have detailed merely on one aspect of attention

demand. The objective of this study was to investigate the degree to which various attentional paradigms would be demanding to the participants with different level of cognitive failure. A total of 24 participants within three groups of low, medium, and high CFQ scorers completed two 15-min and one 60-min sessions representing three attentional paradigms of "divided, selective, and sustained" attention. Outcomes were measured in subjective assessment of workload, stress, arousal, and anxiety level, along with performance measures. In general, divided attention task created higher level of workload with better arousal level, while an increased level of frustration with a decreased level of arousal induced by sustained attention task. Confirming the proposed model of cognitive failure, greater workload with worse psychological functioning and performance breakdown was found among the high CFQ scorers. Therefore, considering attentional paradigms and individual's cognitive failure in studying workload and performance would make a new prospective in real-world and laboratory applications. Decreasing adverse effect of work demand and increasing productivity rate would be possible implication of such investigation.

Keyword: attentional demand, cognitive failure, CFQ, stress, arousal, workload.

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[SY16-02]
Emerging Health & Safety Issues in Changing Workplaces: A Canadian Discussion

P.K Abeytunga

Canadian Centre for Occupational Health and Safety, Canada

The impact of workplace changes on health, safety and well-being of employees has been of wide-ranging concern throughout the world. Issues such as the effects of increasingly precarious employment; gaps created in protection, accountability and responsibility for health and safety in the workplace; emerging technologies and processes that bring new risks to workers and why organizations need to focus on the total well-being of employees have been identified as important considerations needing wider discussion and exploration.

In the fall of 2007, the Canadian Centre for Occupational Health and Safety (CCOHS) organized a tripartite national forum to explore workplace health and safety issues emerging from changing workplaces. More than 200 subject experts, workers, employers and governments shared their knowledge and experience and discussed these issues in greater detail, highlighting their own experiences, identifying key concerns, and outlining possible solutions and strategies.

Small group discussions generated a number of possible solutions and strategies to improve health, safety and well-being of Canadians. Based on these findings a survey was developed which invited Canadians to express their opinions and to weigh in on this discussion.

This presentation will present the results, as well as a Canadian perspective on the impact of changing workplaces on worker safety and health.

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[SY16-03]
Psychological Stress in the Workplace: Measurement Problems and the Integration of Data into a Physical & Psychological Stressor Database

Dirk Windemuth
German Social Accident Insurance (DGUV), Germany

[SY16-04]
Occupational Safety and Muscular Skeletal Disorders of Truck Drivers

Nguyen Thu Ha

National Institute of Occupational and Environmental Health, Vietnam

This study was carried out to investigate the occupational safety and muscular skeletal disorders (MSDs) of truck drivers. This is a cross-sectional study, compared between two groups. Some methods were used to assess the occupational safety such as temperature, humidity, air velocity; vibration velocity, acceleration of vibration; time of working hours, working posture and ergonomics. One hundred twenty-six (126) Bella drivers and 102 workers in control group were interviewed, examined clinical and x-ray film to investigate the low back pain (LBP) in workers.
The results showed that: Microclimate of driver's workplace is depending on the weather, too hot in the summer and too cold in the winter. 100% workers were discomfort with the sound level, vibration when working. Vibration of Bella was exceeded allowable limit at 4Hz, 8Hz, 16Hz: vibration velocity was 1.35-4.6 cm/s at X, Y, Z axis and acceleration

of vibration was 0.7-4.25 m/s2. Couldn't adjust desk ; high intensity and long working house in sitting posture is add non-safety factors of Bella drivers.
Among Bella drivers the percentage of LBP was very high (70.6% LBP history, 59.5% LBP at present) and significantly higher than that among the control group (OR=5.26 in history, OR=4.08 at present; P<0.001). Bella drivers suffered mainly from LBP<7days (69.7%). LBP occurred mainly after work-shift (88.7%). The degree, frequency of LBP Bella drivers was also higher than that among the control group (P<0.05). The percentage of Schober test (+) of Bella drivers was significantly higher than that among the control group (41.6% and 21.9%; P<0.05). Especially, the percentage of vertebral degenerate in X-ray film of Bella driver was significantly higher than that among the control group (OR=6.35 P<0.02).
The authors recommended combining appropriate methods should be applied to improver working condition in order to reduce the rate of LBP of truck drivers.

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[SY16-05]
Heart Rate Variability: Measuring a New Pathway of Work-Related Chronic Heart Disease

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Objective: The aim of this study was to investigate Heart Rate Variability as for the index of work related heart disease among the 12-hour shift workers in the automobile factory in Korea.
Method: The study population consisted of 100 workers, who were randomly selected among 25,000 workers of in an automobile factory in Korea. 85 workers completed a 24-hour ECG recording (Marquette) for one day shift (08:00-20:00h) and 50 workers for one night shift (20:00-08:00h). We analysed 24-hour trend of the circadian variability of the heart rate variability over a week of day and night shifts, considering the subjective ratings of severe sleepiness (Karonlinska Sleepiness Scale 7 or higher) and work intensity (Borg Scale 5 or higher).
Result: During the night shifts, the circadian variation of the HF and LF/HF ratio component of the heart rate variability decreased, reflecting a significant reduction in the cardiac parasympathetic and sympathetic activity for the night shift workers. On the other hand, the LF/HF ratios of heart rate variability were increased during the day sleep after night shift from the day of second night shift onwards. The circadian disruption of the heart rate variability was significant, and the workers could not obtain a recovery time over a week of night work. Normal circadian rhythm of the autonomic activity was blunted among the night shift workers who were very sleepy or had intensive physical labouring work during the night shift over a week of night work.
Conclusion: The study indicates that the normal circadian rhythm of autonomic activity was blunted among the night shift workers. Cumulative effect on the circadian disruption became more noticeable toward to the weekend than in the beginning of the week during 5 or 7 consecutive night shifts among the 12-hour shift workers in the automobile factory.

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[SY16-06]
Association between Changed Working Conditions and Musculoskeletal Disorders in Korea

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Speakers' Corner

Speakers' Corner

[SC01] General Safety

June 30, 12:15 - 13:15
Room: 203, COEX

Moderator:
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[SC01-01]
Who is More Participatory on Safety and Health Education at Work?: Implications Based on PRECEDE Model

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The purpose of this study was to analyze the educational infra-characteristics associated with workers' participation on safety and health education at work (SHE) based on the diagnosis constructs of PRECEDE model. A total of 627 workers (521 manufacture and 106 construction) in 204 companies successfully participated in the self-administered survey. Five-questionnaire pack was delivered to the safety and health manager in each company randomly selected from the mailing lists of the Korean Occupational Health Conference and the SH managers distributed the five questionnaires to the workers in their companies. The questionnaire asked social (demographics) characteristics, injury and illness history, health risk behaviors, safety and health environments at work, perceived participation on SHE at work and educational infra-characteristics (predisposing, enabling and reinforcing constructs) based on the diagnosis steps of PRECEDE model. The companies of which were located in metropolitan areas were 28.0% and female workers were only 16.2%.
Based on hierarchical regression analysis, social characteristics explained 11.0% variance of the workers' participation on SHE. The total explanation power of educational infra-characteristics was 31.0% on workers' SHE. Predisposing factors explained 20.0% variance of workers' participation on SHE and the other enabling and reinforcing factors explained 9.0% and 2.0% each on workers' SHE. Predisposing factors were stronger than enabling and reinforcing factors in describing workers' SHE participation. Woman and illness/injury experience related to work were significantly related to better health education participation. Positive efficacy on SHE, frequent experience of case-based lecture, and less preference of SHE by internet were significantly associated with better participation. Employed in the company which assigned at least a safety and health supervisor, great educational competencies of current in-service educators, and SHE interests and support from owners and government agencies were meaningful enabling and reinforcing factors.

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[SC01-02]
How to Ensure Effective OHS Training with Practical and Sustainable Outcomes

Phil Wadick

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I am studying for a PhD at Monash University, and my main research question is: *What is the role of OHS training in making workplaces safer?* Some sub questions are: *How does the OHS trainer ensure that their course is effective? How does the trainer know that the course is effective? What does good ohs training look like? What barriers to safe working do the trainees face once they return to the workplace after the training?, and, how do the trainees navigate and negotiate these barriers?*
I firstly consider learning theory and its implications for how OHS training is conducted. I then suggest the types of methods and styles of training that may help training participants learn to be effective ohs ambassadors. People learn theory in the classroom, but it needs to be put into practice back at the workplace to make the workplace safer, and this is not always easy, because there are many potential barriers. By OHS training, I mean any type of training designed to give people the knowledge skills and attitudes to improve the safety performance of their workplace. This could mean any or all of the following: their own safe behaviours, influencing the safe behaviours of others, influencing decisions made by management about health and safety, reporting and follow up of incidents (near misses and actual hits), and participation in risk assessments and ohs consultation at work. In the final part of this paper, I am inviting anyone who is interested in

contributing their ideas to this research to contact me on the details provided. I would love to either interview you or have you answer some survey questions, or generally provide input from your experiences. You may be an OHS trainer, have participated in OHS training, or somehow have experience of OHS.

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[SC01-03]
Training Program in Increasing Knowledge on Chemiscal Risks at Workplaces

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In Thailand, the workers are exposed to various Chemicals used in their workplaces without knowing the original substances, health hazards and the corrective preventive measures. A training program was designed as a pilot study to educate the workers' representatives to be able to.

1. recognize the exposed chemicals
2. adjust the chemical survey checklist
3. to apply both the checklist and the questionnaires try those items (2), (3) as instruments for their workplace investigation.

Twenty five worker's representatives from 25 chemical factories were selected to participate in this training program. Active learning method was used and practical works were assigned and monitored through out the study period. Immediate educational, evaluation was made for the effectiveness of input, process and output, with instruments designed for this. Descriptive data analysis was done. The output showed satisfactory results in terms of knowledge, skill and attitude. The training program was successful and could be used as a training model for the workers education in this country.

Recommendation from the workers' representatives were in there main items. These were

1. giving education to the workers in view of chemical hazards and protection,
2. joint cooperation between the manager and the workers should be fully urged,
3. facilities for environmental assessment and health monitoring of satisfactory standards were to be developed in order to control the hazardous situation.

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[SC01-04]
Healing on Education-Overview on Teacher Burnout

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Burnout results from the chronic perception that one is unable to cope with daily life demands. Given that teachers must face a classroom full of students every day, negotiate potentially stressful interactions with parents, administrators, counselors, and other teachers, contend with relatively low pay and shrinking school budgets, and ensure students meet increasingly strict standards of accountability, it is no wonder many experience a form of burnout at some point in their careers. Efforts at primary prevention, in which teachers' jobs are modified to give them more control over their environment and more resources for coping with the demands of being an educator, are preferable over secondary or tertiary interventions that occur after burnout symptoms have surfaced. However, research reviewed here indicates each type of prevention can be useful in helping teachers contend with an occupation that puts them at risk for burnout.

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[SC01-05]
A Critical Evaluation of Workers' Compensation Schemes in Malaysia

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BACKGROUND: Workers' compensation schemes for occupational injuries and diseases vary among countries. Many countries have reformed their systems to suit to changing demands from workers and employers. In Malaysia, some changes had been made since its first introduction in 1929. A quick review reveals that a much better system is desirable, one that can provide a fair and speedy compensation to injured workers in the country. In view of this a critical review was embarked that specifically looked at workers' coverage, workers access to common law and use of list for compensable occupational diseases. **METHODS:** The review involved two methods (i) the gathering of information from official publications about workers' compensation schemes in different countries, and

(ii) a critical review performed on their implementation. **FINDINGS:** The first statutory no-fault workers' compensation scheme in Malaysia was enacted in 1952, and was modeled after the British System. In terms of coverage, it was similar to other countries such as Canada, Australia and the USA. Singapore was the exception. The scheme, however, excluded the self-employed. Under the no-fault compensation scheme, injured workers are not entitled to claim under the common law. The same practice is found in some regions in Australia. Malaysia, as in Great Britain and Australia, uses the list of prescribed occupational diseases for compensating the injured workers.
CONCLUSION AND RECOMMENDATIONS: Clearly, there are advantages and limitations in different workers' compensation coverage, access to common law and the use of occupational disease list. Although Malaysia's workers' compensation schemes are comparable with some other countries, there are justifications for further reform to address issues relating to fairness and speedier process.

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[SC02] General Health

June 30, 12:15 - 13:15
Room: 208, COEX

Moderator:
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[SC02-01]
Program Nutrition Training for Catering to Sonatrach

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Objective:

It is about a prevention program by the food, written down like important project bound to the function human resources in Sonatrach for the improvement of the conditions of work and life in a worry to preserve the health of the workers of Sonatrach and to improve the food thus.

Method:

- Choice of an external survey office specialized in dietary nutrition
- Nutritional investigation on a pilot site chosen by the General Direction
- Development of a food plan
- Conditions of success of setting in work
- Program of formation

Results:

The setting in work of the food plan is tributary of key factors of success between other the formation, which answers the following criteria.

- Identification of the population concerned (actors of the restoration)
- Definition of the families by population (physicians of work, managers of the restoration and the technicians of the restoration
- Choice of the formation site
- Organization of the educational and material logistics
- Establishment of the program to the card according to the profile of every population
- 167 actors of the restoration benefited from this action of formation

Key words:

- Program of prevention by the food
- Formation in nutrition
- Actors of the restoration

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[SC02-02]
Biopsychosocial and Psychoactive Drug Abuse among Workers Suffering Work - Related Musculoskeletal Disorders and Exposed to Workload

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Background: The biopsychosocial model is an explanatory framework that recognize the importance of psychological

and social factors in determining how musculoskeletal sufferers cope with their conditions. The occupational health professionals should assess the interplay between the biological e.g. Musculoskeletal disorders (MSDs), the psychological e.g. anxiety, depression and the social e.g. work demands and drug abuse.

Objectives: To find out the proportion of the psychological disorders and drug abuse among the studied groups, to find out the proportion of drug abusers among the examined cases with MSDs and suffering psychological disorders,and to find out the factors determined the drug abuse among the cases group.

Subjects & Methods: Case - control study was conducted. 171 workers with MSDs (cases) and another 171 were selected (controls). Both groups were subjected to interview sheet to assess general characteristics, workplace ergonomic status, psychological disorders, factors determined drug abuse and laboratory investigation for drug abuse.

Results: 22.8% and 2.9% of cases and controls were suffering depression respectively. 26.9% and 3.5% of cases and controls were suffering anxiety respectively. 71.9% and 19.9% of cases and controls were abusing tramadol respectively while 34.5% and 45.6% of both groups were abusing Cannabinoids respectively.

Conclusion: cases with work related MSDs might be complicated with psychological disorders and drug abuse as a result of interaction between the disease, unsafe ergonomic workplace and persistent work load.

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[SC02-03]
Occupational Health Developments and Initiatives in the United Arab Emirates

Tar-Ching Aw

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The United Arab Emirates (UAE) is a rapidly developing country in the Gulf region. The petroleum industry, construction and tourism are among its major industries. Industrial development has been accompanied by an increasing interest in occupational health and safety. Some identified challenges for the region are:

a) Improving the infrastructure for health and safety
b) Training of health and safety professionals
c) Collecting better data for occupational morbidity and mortality
d) Dealing with an influx of foreign labour
e) Encouraging a health and safety culture
f) Reviewing, updating, and enforcing health and safety legislation
g) Re-focusing occupational health and safety activity on preventive action.

Initiatives that have started within the past year include:

a) Developing occupational health and safety as part of a wider public health program.
b) Building up networks and multidisciplinary teams within and between universities, government agencies (such as health authorities, the Department of Labour, and the Environment Agency) and industry.
c) Cooperating with established institutions in neighboring Gulf Cooperation Council (GCC) states and in developed countries with special expertise in public health and occupational health.
d) Improving death certification and collecting better data on hospital discharges
e) Encouraging relevant screening and occupational health surveillance
f) Starting training programs within the medical faculty of the national university, including continuing professional development events. There are opportunities within the region for post-graduate training leading to internationally-recognized qualifications.

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[SC02-04]
Northwest Anatolia Hardcoal Basin (Turkey) Geologic Factors Causing Occupational Diseases

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Northwestern Anatolia Hardcoal Basin (Turkey) covers approximately 13.500km^2 area in the Black Sea region. In this basin, 45 pieces of coal seams which dates back to Carboniferous aged have been calculated as 1,00x10^{9}tons of coal reserves. The industrial and cokengability coals between 2,00x10^{6}tons and 7,00x10^{6}tons have been produced annually since 1900, from surface to -560m depth.

Coal production has been carried out since 1941 by Turkish Hardcoal Enterprise (TTK). 450km underground galleries in basic coal rocks have been excavated for coal production by TTK. The numbers of workers ranging between 10.000 and 45.000 were recruited between the years 1961 and 2007 for coal production on surface and

underground. In this period, while no vocational diseases were observed on surface workers, the workers in underground were diagnosed with silicosis/pneumoconiosis in rates between %0,04 and %3,56.

The coal basic rocks in the basin are made up of conglomerate, sandstone, siltstone, clay stone, shale and coaly shale. These detritus sedimentary rocks are composed of maximally %77 quartz, magmatic rock fragments, clay, silica, organic matter, by cementing the above cited. The coal bands are separated into sandstone, siltstone, clay stone, shale and coaly shale; and the cleats have been observed to be full with such materials clay, pyrite and marcasite.

In the galleries opened to prepare for the coal production, the progress of ha been made with explosive excavation method. The uniaxial strength of basic coal rocks vary between 36MPa and 144MPa. Meanwhile, 0-5μ dimensional particles are founded, in which there are also fragmented angular, sub angular and sub rounded quartz and rock fragments affecting the workers.

In this study, the relationship between the vocational diseases such as silicosis/pneumoconiosis among workers in Northwestern Anatolia Hardcoal Basin and the coal production workers, coal production, progress by excavation, the mineralogical-petrographic structures of coal basic rocks established.

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[SC03] Occupational Medicine, Epidemiology

June 30, 12:15 - 13:15
Room: 304, COEX

Moderator:
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[SC03-01]
Nickel Associated Health Manifestations among Electroplaters

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Background: Electroplating processes result in the emission of aerosoles of soluble nickel compounds that is a recognised health hazard.
Aim of the work is to investigate health hazards associated with exposure in a nickel in electroplating workshop environmental air assessment at the workshop.
Methodology: Environmental air sampling was performed for nickel electoplating work shop that include 50 workers. For evey worker personal interview, clinical examination including otolaryngeal examination was done. The results were compared to those obtained from 30 matched controls. Investigations involved urinary and serum nickel , kidney and ventilatory function tests, IgA and IgE immunoglobulins.
Results: Serum urea, creatinine and retinol binding protein were statistically significantly higher in exposed workers compared to the controls. Low levels of IgA and high levels of IgE were reported among our exposed workers. Reduction of spirometric measurements but not to the level of significance, was also demonstrated. The concentration of nickel in urine of workers averaged (2.9Ug/L) and in serum averaged (3.4 Ug/L). Statistically significantly positive correlation was found between serum levels of urea, creatinine, retinol binding protein and IgE and serum and urinary nickel of exposed workers.
Recommendations: We recommended periodic medical examination including chest and nasal sinuses x-rays annually. Nickel concentration in plasma and urine are helpful for screening and the biologic TLV of nickel in urine is considered as 150 Ug/L. Comlaining cases should undergo sputum cytology and nasal mucosal biopsy. Patients who developed allergic asthma or who were suspected to be at increased risk of developing allergic asthma should be given a validated respiratory disease questionnaire and pulmonary function testing yearly.

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[SC03-02]
Prevalence of the Metabolic Syndrome Using the International Diabetes Federation Definition for Workers in Japan, China and Mongolia

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A clustering of insulin resistance, hypertension and dyslipidemia has been labeled as metabolic syndrome. Asians have a lower frequency of obesity than do Caucasians, but have an increasing tendency toward metabolic syndrome. Most data on metabolic syndrome are based on studies from Western countries with only limited information derived from Asian populations. We conducted a cross-sectional study of individuals aged 18-60 yr in workplace settings. We examined and analyzed the health data of 1,564 Japanese, Chinese and Mongolian for metabolic syndrome based on the International Diabetes Federation (IDF) definition. The Japanese, Mongolian and Chinese men were 10%, 50%, 39% ≥ 90 cm WC, and the Japanese, Mongolian and Chinese women were 12%, 54%, 24% ≥ 80 cm WC, respectively. The Mongolian men and women had significantly higher values for WC, followed by the Chinese men or the Japanese women, and then the Japanese men or the Chinese women. The prevalence of obesity in the Chinese showed a remarkable diversity by gender, compared to the Japanese and Mongolian. The prevalence of metabolic syndrome was 7% and 6% for Japanese men and women, 22% and 24% for Mongolian and 23% and 9% for Chinese, respectively. Japanese has a lower frequency of visceral obesity than do Chinese and Mongolian, but have an increasing tendency toward obesity-related metabolic disorders. Obesity and metabolic syndrome are increasing in Asian workers with their social-economical development, but obesity-related metabolic disorders are remarkably different relative to ethnicity.

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[SC03-03]
Pneumoconiosis Mortality and Morbidity Trends in the United States, 1968-2004

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Objective: To describe trends in pneumoconiosis in the United States during 1968–2004.

Methods: The National Center for Health Statistics multiple cause-of-death records were used to derive numbers of deaths and death rates for asbestosis, coal workers' pneumoconiosis (CWP), and silicosis. Morbidity data on CWP from a large national worker monitoring program were used to derive CWP prevalence defined as presence on the chest radiograph of small opacities category 1/0 or greater or large opacities, as determined by at least two National Institute for Occupational Safety and Health (NIOSH) readers.

Results: Overall, annual asbestosis deaths increased over 19-fold from 78 in 1968 to 1,493 in 2000 and then declined to 1,470 in 2004, due mostly to a drop in asbestosis deaths among those aged ≤74; deaths continue to increase among individuals aged ≥75. Silicosis deaths decreased nearly 6-fold from 1,065 in 1968 to 178 in 1998; no substantial change was observed thereafter in all age groups (mean 166 deaths/year for 1999–2004 overall, with a mean of 4 deaths/year among individuals aged 15–44 years). CWP deaths peaked in 1972 (n=2,910), and then declined more than 4-fold to 703 in 2004. After 1998, the number of CWP deaths continued to decline among those aged ≥65, but appeared to increase among younger individuals (15–44 years old). CWP prevalence in working coal miners with ≥20 years of tenure increased nearly 3-fold from 3.2% in 1995–1999 to 8.3% in 2005–2006.

Conclusions: The slight decline from 2000 through 2004 in asbestosis deaths suggests that asbestosis mortality has peaked in the U.S. Mortality data for silicosis indicate a continuing occupational risk, even in younger workers. The increase in both CWP mortality and CWP morbidity suggests that past gains in disease prevention are being compromised.

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[SC03-04]
Malaria in Quarry Mines in Western India District of Jodhpur, with Emphasis on Safety And Health of Workers

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Quarry-mine malaria is a serious health problem in western Rajasthan, particularly the Thar Desert district of Jodhpur, where a sizable population (> 10% of total cases in the state population of 35 million) is annually affected by malaria especially the parasite *Plasmodium falciparum*. These quarry mines, with an estimated labourer force of 0.2 million engaged in mining works, span over 70,000 sq. km., bracing Jodhpur along its southwestern flank. These are generally filled with rainwater abounding in breeding by mosquitoes. Thousands of quarry-mine labourers, with per-capita income below poverty line and often hailing from

far off areas, are settled in poorly maintained hutments in the vicinity of waterlogged quarry-mines, suffering ceaselessly with both the obnoxious mosquito biting and deadly malaria infection. A high slide positivity rare (21.83%) and predominant *P. falciparum* (59.8%) are sufficient evidence to exhibit the continued malaria associated maladies of the quarry-mine workers, who by virtue of their occupation are already exposed to serious health hazards due to silicosis and tuberculosis. Most malaria positive cases were contributed by 1-14 yr age group, with an alarming infant parasite rate of 8.0%. Interestingly more males were positive for malaria infection than the female population (4:1). Malaria mosquitoes commonly breeding in quarry-mines include the primary vector species like *Anopheles culicifacies* and *An. stephensi*, besides secondary vectors such as *An.subpictus* and *An. annularis*. In India, *Anopheles culicifacies*, a rural species, is responsible for nearly 70% malaria transmission, while *An. stephensi*, an urban species, transmits nearly 30%. Both these malaria mosquitoes orient to bite on man both indoors and outdoors in the night; men clothed minimally are bitten most ! Pregnant and lactating women as well as children are vulnerable to the quarry-mine malaria. Insecticide-treated bed nets have proved highly successful and socially acceptable in preventing malaria transmission in the Thar Desert.

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[SC03-05]
Risk of Hospitalization by Pneumonia in Workers Exposed to Crystalline Silica: A Record Linkage Study

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Background: Many workers are exposed to crystalline silica which is a well-known oxidative stress promotor. The authors studied the relationship between pneumonia and occupational exposure to crystalline silica.
Methods: The cohort comprised 38,410 silica-exposed workers and 417,067 workers exposed to only noise, who underwent specific health examinations from 2000 to 2004 at 120 medical service institutes in Korea. Hospitalization and deaths by pneumonia during the period of 2000-2005 were also investigated. The hospitalization rate ratio(HRR) of this group was analyzed comparing with noise-only exposed workers.
Results: The risk of pneumonia hospitalization in crystalline silica exposed workers was significantly higher than that of noise-only exposed workers (RR=1.22 , 95%CI:1.18-1.26). We also computed RR by industrial classifications. There was increased risk of pneumonia hospitalization in foundry, ceramic, and cement industries.
Abstract ···· Conclusions: There were corelation between crystalline silica exposure and pneumonia hospitalization. This is just a record linkage study, and further research is needed including other factors such as related disease, smoking, and socioeconomic positions

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[SC03-06]
Distribution of Occupational Diseases in the Zonguldak Coal Basin

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Coal mining has an important share within the distribution of occupational diseases according to the sectors in the world. Zonguldak Hardcoal Basin is ranked to be the first in the regional distribution of occupational diseases in Turkey. In this study, following the definitions of occupational diseases encountered in the region, their distribution according to the years has been determined. Then, these distribution according to the years has been determined. Then, these distributions have been investigated by the aid of variable and constant base indexes. As a result, it has been observed that distributions show great differences. Especially, it has been determined that occupational diseases have increased in certain years. The reasons for the increases in such years should be studied and the preventive measures should be taken without delay.
Measures to be taken in order to prevent occupational diseases very according to level of labour, enterprise and country. However, it is a must that a society should be provided with knowledge of industral health in order to prevent industrial diseases really. Two way communication networks based on reciprocal cooperation among employee, employer and public sector should be established. One of the most important conclusions that we have reached and which should be always borne in mind is the fact that maintaining of occopational health is much more cheaper than bearing the consequences of occupational diseases.

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[SC04] Construction Safety

June 30, 12:15 - 13:15
Room: 320, COEX

Moderator:
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KOSHA

[SC04-01]
The Aplication of the Convention 167 (Contruction) in Brazil

Marcelo Tacitano, Lie Liung

Ministry of Labour and Employment, Brazil

The Specialised Services on Safety and Health at Work (SESMT) are organised by the companies to promote the worker's health and integrity. Such services were launched in Brazil in 1972 due to the pressure of the ILO and some international financial organisms in function of the Brazilian high number of occupational accidents. In 1991, Brazil ratified the Convention 161–Occupational Health Services. The composition of the SESMT in Brazil depends on the economical activity (risk degree) and the number of workers in a company. According to the norm can be part of this service, vocational and graduated professionals. Due to the SESMT rules, it takes place in just about 1.5% of the companies, although it is know that they employ about 35% of the formal country's workforce. However, the other companies (the major part) are not provided with the services, therefore their commitments with Safety and Health at Work (SHW) need to be done by outsourcing professionals, whose quality control is difficult.
The aim of this paper is to show the difficulties and limitations that SESMT faces, to present some statistics of the registrations of these services in the Ministry of Labour and Employment, and also the alterations that have been proposed to improve the text of the current norm. In this sense, it was recently published the Ordinance nº 17/2007, that seeks to enlarge the covering and to turn the services more effective, with the possibility of inclusion of the outsource companies and also the definition of SESMT for a group of companies of the same economical activity at the same district. However, due to the lack of clear procedures in the new Ordinance, some professionals are claiming that the situation is going to get worse instead of better. It is known that several other alterations are coming up.

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[SC04-02]
Measuring Safety and Productivity in Construction

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The construction industry is one of the largest industries and continues to lead the private sector in having the highest number of workplace fatalities [U.S. Bureau of Labor Statistics]. One of the most hazardous areas in the construction industry is roofing. Not only does the higher rate of injuries and fatalities in the roofing industry cause a major concern for health and safety, but it also imposes a large economic burden on many employers and insurers. The purpose of this study thus was to investigate the role of safety, costs of injuries and productivity measurement in the roofing contracting industry. A questionnaire survey was designed and sent to seventy eight different residential and commercial roofing contractors in the Midwestern United States. The study findings indicated that larger roofing companies are generally better organized from a safety standpoint than smaller roofing companies. Over the years, the insurance premiums and the workers' compensation costs have been considerably increased. The survey results pointed out that the most expensive injuries were those pertaining to the back. The study also revealed that the productivity in roofing jobs has been determined by taking the number of hours worked per week and dividing into the square footage of work completed. Loss of productivity was determined to be the highest expense to a company when an injury occurs. Methods of measuring accident costs and productivity in construction are demonstrated in the paper.

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[SC04-03]
Pattern of Injury among Building Construction Workers in Iddo Local Government Area, Oyo State, Nigeria

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In Nigeria, workers on construction sites mainly belong to the informal labour sector. This study was conducted to document injury experiences among construction workers in a newly developing area in Oyo state.
Qualitative research methods (in-depth interviews) were utilized. Consent was obtained from the foremen at the sites visited and interviews conducted in the local language and tape recorded.
Twenty-four workers on 7 building sites consented. Their ages ranged from 18 to 69 years, only one woman, (a daily paid labourer) was interviewed. There were 15 bricklayers, 4 carpenters, 2 building block-moulders, 1 electrician and 1 welder. The respondents had been working for a range of 1 to 53 years. The respondents worked for an average of 8.2 (S.D ±1.6) hours a day, mostly for 6 days in the week and made about N 200 (about $1.67) to N 3,000.00 ($25.00) per day. In all, 16 (66.7%) workers had sustained injuries. These were mainly lacerations, nail puncture wounds, falls and crush injuries. One worker, an electrician said he once passed out while laying electrical wires in the ceiling of a house. The injuries had prevented the respondents from working for between a few days to over a month. Only one had his treatment bill picked up by his employer. None had suffered any permanent disability. About half knew of colleagues who had suffered from severe accidents such as some who were victims of collapsed buildings and falls from heights.
The study showed that construction site workers are exposed to injuries leading to lost days of work and income. More research is required to further quantify the magnitude of the problem and design appropriate preventive measures.

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[SC04-04]
The European OH&S Network in the Construction Sector: The Case of the Directive 92/57/EEC

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Problem definition:
The European Union includes 27 countries (EU-27), of which 15 are the old Member States (EU-15), 10 joined the EU in 2004 and 2 in 2007. More countries are in the process either of presenting their candidacy to join the EU or complying with the requirements to be accepted.
The new countries shall transpose in their national legislation system the EU Directives in order to harmonize them. In fact nowadays in Europe we have one market characterized by free exchange of goods and services.
In the construction field, the Directive 92/57/EEC *"on the implementation of minimum safety and health requirements at temporary or mobile construction sites"* is the main directive and it has introduced an innovative approach regarding OH&S management, a new professional subject (safety and health coordinator) and new responsibilities of the subjects involved.
Method:
The paper will focus on the importance of the cooperation between "old" and "new" countries.
In fact the historic countries could share their:
a) knowledge and expertise
b) methodologies, procedures and tools
c) lessons learned
d) cases study
The new countries have to deal with:
e) the integration between European and national legislation
f) the comprehension of the new approach
g) the training both of the new professional subjects and of clients, designers and contractors
The exchange of expertise and information related to OH&S is a big value which could be done at different levels (national, regional, working categories and groups) and in different ways (seminars, publications, internet, etc).
Conclusions:
The paper will highlight how OH&S matters and in particular safety and health coordination activity (92/57/EEC) could benefit from the exchange of expertise and information among Europe.
Keywords:
Directive 92/57/EEC, innovative approach, OH&S training and information; exchange of expertise and information.

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[SC04-05]
Zero Electric Accident in the Construction Industry: A Possible Objective - Report of a Successful Strategy

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The work deals with an action developed in João Pessoa city, located in the Northeast of Brazil, with the aim of reducing, in the Construction, the high incidence of labor accident caused by electric shock, something which, in the years 2003 and 2004, reached 60% of the total of deaths in the sector. Identified as basic causes of the problem, the improvisation and the lack of planning started to be fought through the demand for the carrying out of a project of electric installations in the constructions by means of: a) Labor Inspection in their supervisions; b) the local energy dealer, as a requirement for attending the requests for connecting energy to start the work. This strategy was conceived by the Regional Permanent Committee About Conditions and Labor Environment in the Industry of Construction in Paraíba (CPR/PB) – which comprises 19 workers' organizations, entrepreneurs and the Government. The work started late in 2004, and presents as main results: a) the formal exigency of an electric project in 100% of new or inspected works; b) the non-occurrence, in the Construction, since 2005, of fatal accidents caused by electric shocks, with the corresponding diminution of 60% of deaths in the sector, overcoming the goal established by ILO, in 2006, for the countries in the Americas and the Caribbean – a reduction of 20% of the accidents in a period of 10 years. We can affirm that the reported action: a) due to its simple format presents a great potential of being refuted in the various regions of Brazil and other Latin-American countries; b) induces the cultural change translated by the move from the practice of improvisation to the planning and effective management of occupational safety; c) confirms the idea that an articulated inter-institutional work multiplies efforts and makes results possible.

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[SC04-06]
Musculoskeletal Symptoms of Ironworkers in Highway Construction: Implications for Ergonomic Assessments

Sang Choi

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For years the U.S. construction industry has been associated with increased rates of work-related musculoskeletal disorders (WMSDs). This study is to investigate the potential risks of WMSDs for the type of activities that the ironworkers encounter on a daily basis in highway construction. Eleven right-handed male field workers participated in this study. The ergonomic assessment tools included BodyMap instrument for measuring potential ergonomic concerns, and handgrip dynamometer for measuring the maximum voluntary contraction (MVC) and applied grip force of the rebar-tying tasks. Results from the BodyMap indicated that the mid-to-lower back and right hand/wrist for deck tying task recorded greater frequency and discomfort levels. For pier tying, the BodyMap recorded the right shoulder clearly stood out in terms of the perception of the frequency and discomfort level. Furthermore, the current deck rebar-tying operation comprised excessive applied grip forces & awkward body postures, and this could result in damage and fatigue in the upper extremities and back of the workers. This study suggests that there is a significant risk of injury and musculoskeletal disorders of ironworkers performing these designated tasks. By properly using the ergonomic assessment techniques, valuable information on work design and hand tool selection may assist in the early intervention of work related musculoskeletal disorders.

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[SC05] Psychosocial Factors

June 30, 12:15 - 13:15
Room: 321, COEX

Moderator:
Kyung-Yong Rhee
KOSHA

[SC05-01]
Environmental Stressors in the Iron and Steel Industry. Current Status and Future Plan of Industrial Hygiene Surveys in the Visakhapatnam Steel Plant

Prabhakara Murty Potharaju

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Environmental stressors in the iron and steel industry are large in number and typically they include, noise, vibration, extreme temperatures, ionizing and non-ionizing radiation, inadequate illumination, inhalable agents (vapors, gases,

dusts and fumes), exposure to pathogens (e.g. legionella), exposure to carbon monoxide (CO) gas, skin contact with chemicals (allergens, irritants & sensitizers), working in confined spaces, ergonomic hazards, exposure to asbestos, slips, trips, falls from height and same level, falling objects, electric shock, burns related to electrical and accidental contact with hot molten metal, inadequate ventilation, unguarded machinery, fire and explosion, workplace violence, odor pollution, inadequately trained health and safety professionals, lack of effective supervision on usage of personal protective equipment (PPE), manual handling and repetitive work, inadequate emergency rescue facilities, inadequate occupational safety and health training and lack of effective communication and coordination among the various professional groups. Forethought in identification of leading and lagging indicators by an occupational health and safety (OHS) professionals will lead to better performance and sustenance of good work practices. Risk management at the working environment is a challenge to frontline manager, health and safety professionals in an organization. Teamwork, cooperation, coordination, trust and openness among various professional groups, effective communication on risk control methods implemented at workplace are the assets to an organization working to improve workplace risk management. The struggle for reducing and controlling risk needs comprehensive hazard identification, risk assessment, risk communication and risk management. Industrial hygiene surveys conducted during the period 1996-2007 in the Visakhapatnam steel plant is summarized and future plans are discussed. This proactive study has enabled to identify the possible workplace hazards and scope for improvement in risk assessment and risk control measures at working environment. Safe and decent work is the ultimate goal for risk assessors in the Visakhapatnam steel plant.

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[SC05-02]
Assessment of the Psychosocial Environment in Different Romanian Work Fields Using the Romanian Version of the Copenhagen Psychosocial Questionnaire

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The psychosocial work environment is generally considered to be one of the most important work environment issues in contemporary and future societies. A tool for the assessment of the psychosocial work environment – The Copenhagen Psychosocial Questionnaire (COPSOQ) – was adapted and validated in Romania, in order to develop a standardized method to be used in research of the psychosocial factors.

Objectives: [1]. to adapt and validate the Romanian version of the COPSOQ. [2]. to assess the work environment in different work fields in Romania.

Methods: The adaptation process was based on the translation and back translation method. A group of 30 subjects were involved in the pilot study, in order to verify the comprehensibility of the translated terms and the acceptability level of the questionnaire. Therefore, a representative population based survey of the employed population in different Romanian work fields was developed. The psychosocial risk factors and stress symptoms were assessed.

Results: The Romanian version of the COPSOQ "CCEFPs" is equivalent to the original English version, with good validity, reliability and concordance between the two versions.

The assessment of the work environment emphasized medium and high psychological demands for all investigated occupational categories. The health profile is good for all the occupational categories and stress level appeared to be low.

Conclusions: The COPSOQ gives a comprehensive and multi-faceted picture of the work environment in different Romanian work fields. Regarding the psychosocial environment, this seems to be better for the white-collar employees. the emotional demands seem to be apparently professional specific, but studying the enterprise specificity and inter-organizations researches are important.

Keywords: *psychosocial work environment, assessment methods, stress.*

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[SC05-03]
Fatal Cases Resulting from Work-Related Accidents in Brazil: An Overview

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Objective: The purpose of this study is to analyze the trends and differentials of fatal cases resulting from work-

related accidents in Brazil from 1990 to 2006. For all that, the present work comprises two related aspects of a question: a critical appraisal of the official registers of mortality from work, and the arrangement of some proposals orientated to an intervention for this matter of great concern.

Methodology: At first, it aims to analyze the figures as well as the variability in the profiles of death at work from the 1990's to the beginning of this century according to the official information that cover the whole relation correspondent to health, labor and social security in Brazil. Thereafter, besides some difficulties in qualifying round fatal occupational accidents among the set of external causes of mortality, profiles of them are made according to the three class categorization of the violence at the workplace: 'workplace accidents', 'transport accidents' and 'working illnesses'.

Results: Some proposals are suggested to improve both effective identification and new characterization of mortality in the workplace entirely as a condition to overcome the risk of major violence against the worker. That way mortality resulting from accidents in the informal labor market is considered as well as some hypothesis to overcome this serious obstacle and to get effectiveness in injury prevention and safety promotion policies.

Conclusions: By reason of the emergency of high social and economic costs involving work accidents in Brazil, this study searches to provide input for the comprehension of this issue as well as for the government to draw specific policies orientated to minimize the violence of the fatal risks in the workplace.

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[SC05-04]
Unemployment and Its Adverse Effect on Health Status in China

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In China there are only few studies concerning the effect of unemployment on the health status, and all relevant research has been carried out in social sciences or psychology, not in medicine. There is some research available concerning mental health of unemployed persons based on questionnaires, such as SCL-90 or others. According to the results, the prevalence of mental health problems among unemployed persons varies from 5% to 70%. The self-respect decreases dramatically due to unemployment. However, age has a considerable impact on the influence of unemployment. Some factors modify the change of mental health status caused by unemployment. Unemployed persons in the age group 35-44 are more sensitive than those in other age groups. The results indicate that the job loss itself causes the strongest negative impact on mental health. If the job search turns out to be unsuccessful, the mental health status worsens again. Social support, in particular family support is an effective measure against the negative impact of unemployment on mental health. The mental health of the unemployed persons with such support was only slightly affected. Besides helping unemployed people to find new jobs, we should put more attention to their mental and physical health status when they remain in the situation of unemployment for a longer duration.

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[SC05-05]
Alternative Pathway of Impact of Work-Related Stress on Worker's Health

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This study examined the alternative pathway of the impact of work-related stress to worker's health. Work-related stress is one of the psycho-social factors of ill-health among workers in workplace. There are various work-related stressors in the workplace for example physical factors, psycho-social factors, etc. Work demand and decision latitude is the most important factors of work-related stress as psycho-social factors of worker's health. But it is very difficult to identify the mechanism of the impact of work-related stress to worker's health as unilateral pathway through the damage of the endocrine systems. This study identified another pathway of stress effect on health by unhealthy behavior such as drinking and smoking. Worker's health is influenced by unhealthy behavior due to work-related stress controlled by other ill-health factors. Finally work-related stress have two different pathways of effect on worker's health; one is the physiological damage, and the other is the behavioral change.

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[SC05-06]
Urban Lighting and Security: The Artificial Light in the Nocturnal City

Laura Martins[1], Ladjane Vanderlei[1], Luiz Onelio Vanderlei[2]

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As we understand cities as built environments that should promote safe movement for twenty four hours per day, we can't deny the role of artificial lighting in the accessibility of public spaces at night time. Deficient urban lighting directly affects the conditions for walking at night and makes the pedestrians the main victims of the "blackout". In conditions of low luminosity, the visual driving distance to see a person, brake and stop the car before running someone over is reduced by 30%. It is the good quality of illumination that will promote the visualization of passers-by when crossing the streets and also the detection of pavement conditions. When reduced, precarious or nonexistent; urban lighting increases the risks of walking by obscuring the space of relative factors such as holes, culverts, unevennesses, amongst others; inhibiting or hindering the visualization of pedestrians, cyclists and drivers. Regarding crime, urban lighting, when quantitative and qualitatively projected, can be a powerful tool to mitigate the committing of offences in public spaces, thereby inserting itself in the public security politics of the urban centers for the prevention of crime. The objective of this paper is to explore the correlation between security and the placement of urban lighting, comparing them with the attributes of projects of public illumination that incorporate procedures to make the environment's lighting accessible as they relate to the necessities of security and comfort. In this way, a brief history of the illumination of public spaces up until the recent management plans of urban illumination is presented as an overview of the urbanistic and lighting project trends towards safe movement. Finally, some policies and politics of urban Illumination are presented, being directed towards the creation of a friendlier city for the pedestrian and, therefore, more insurance.

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[SC06] New Technologies on Safety and Health

June 30, 12:15 - 13:15
Room: 330, COEX

Moderator:
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[SC06-01]
Development of a Model Regarding a National Information Network in the Field of Occupational Health and Safety in Romania: National Campaign «"Partnership For Employees' Health"»

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Introduction

Within the Phare Project RO 2003/005-551.04.07: "Improvement of the efficiency of the Romanian system for OH surveillance and control of occupational diseases, work-related diseases and injuries due to occupational risk", one component was focus on information and communication activities.

Objectives of the Campaign

Evaluation of the current situation regarding the information activities in the field of occupational health and safety;

Development of a model regarding a national information network.

Target Group

The target group of the national campaign was made up of representatives of: public institutions, employers' associations, trade union organisations, employers.

These representatives were later grouped in 2 types of beneficiaries:

Direct beneficiaries – participants to regional conferences

Indirect beneficiaries – the 2225 enterprises that received information packages.

Description of the Conferences

Six regional conferences were organised, everyone had a different discussion topic (the target group was the same):

Chemical agents at workplace: prevention and good practices for information and communication (Bucharest);

Occupational risk factors with impact on the respiratory system (Cluj);

Working at heights: prevention of the occupational risk (Iasi);

Communication of the Occupational Risk (Sibiu);

Physical hazards- risks that can be reduced: prevention and good practices (Timisoara);

Noise as an occupational risk factor (Tg. Mures).

Press conferences were organised within the regional conferences in order to raise public awareness regarding the messages.

The promotional materials used during the campaign were: posters, leaflets, fact-sheets with specific topics.

Results

Establishing alliances for local partnership in the field of OHS in order to create healthy workplaces for healthy and efficient workers.

Raising the level of information of active institutions.

Promoting the role of occupational physicians within a modern occupational health and safety system.

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[SC06-02]
New Complementary Methods for Prevention and Treatment of ARDs (Asbestos-Related Diseases) & Other Occupational Diseases

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Problem: Occupational diseases eg. those related to Asbestos (including its remediation) are usually progressive & diagnosed late, when available treatments are found ineffective. There are no known good solutions.

Solution proposed is fundamentally novel and is being further developed eg. to counter ARDs and Silicosis etc.. The solution includes;

1. **Industrial Hygiene;**
   a. Deriving new hygiene standards of the environment at work site and outside eg. by adding certain vital parameters currently being neglected and thereby causing severe diseases.
   b. Accordingly developing and adopting new "safework" technologies which should also be suitable for;
      i. Economy
      ii. Ecology
2. **Early Diagnosis:**
   a. New monitoring techniques .
   b. Accordingly new enhanced health and health monitoring standards.
3. **Early non-invasive Treatment:** Promoting the conception, development and adoption of new complimentary health enhancing systems using certain novel applications of bio-techniques to meet the above requirements.

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[SC06-03]
A Study on the Special Analysis of Injuries of Low Falls and the Development of the Safety Devices

In Yong Song, Se Gyun Jeong, Bo Hyuk Ryu, Woon Chul Shin, Sang Won Choi, Hyung Seok Kim, Choong Lyul Lee

KOSHA, Korea

In 2006, according to the analysis of injuries of falls, low falls[1] occupied 70.5 % of falls that the number of injuries due to low falls occurred 8,238.

This study is to analyze the characteristics of low falls, and to confirm the relevance between consciousness for the safety and unsafe behavior of workers by survey.

Also from the viewpoint of worker's safety, we developed the safe and useful safety helmet, safety belts and worktables so as to prevent injuries from low falls.

1) Low falls mean that injuries due to falls occur under 3 meters in height of workplace, it is defined based on the height of one floor (approximately 3 meters) of buildings generally.

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[SC06-04]
Development of Slip and Trip Assessing Robot System

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A prototype portable slipperiness test device, lab-base test equipment and robot system for whole workplace, designed for such routine testing and evaluate flooring and outsole

materials, have been described and are preliminarily evaluated in this study. The prototypes are capable of measuring such frictional properties of floor surfaces, outsole materials using three different test devices and one modes of operation, dynamic loading. A previously developed portable slip meter is used as starting point for designing a slipperiness assessing robot system. A portable slipperiness test device, consisting of digital indicator, sensor unit, weight, fiber optical sensor and servo motor systems, is introduced as assessment equipment for slipperiness hazard. Lastly, we develop automatic slip and trip hazard assessing equipment which is consist of a high precision linear strain gauge, ultra mobile personal computer, slip measuring sensor, 2-D laser scanner, ultra sonic sensor, indoor GPS system, motor driving system and blue-tooth telecommunication system. It measures the dynamic coefficient of friction (DCOF) of a whole workplace. This robot system can be adjusted to modify its driving modes while maintaining a constant 0.2 ㎧ forward speed.

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[SC06-05]
An Improvement of Welding Method for Corrugated Stainless Steel Tubing(CSST)

Wan-Jin Kim[1], **Young-Seop Yi**[1], **Keun-Jun Ryu**[2]

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The Corrugated Stainless Steel Tubing, CSST, for the fuel gas piping system can be installed easily and quickly, and it is constructed under the ceiling and the wall. It has a good flexibility and installation instead of iron pipe. However, the quality of CSST is determined to depend on the stainless steel tubing welding skill. In this study, it was tested by controlling jet point of Ar as inert and cooling gas and compared the bead state of welding point and the performance. As a result, it has the best condition when the jet point of Ar is located behind 5 ㎜ ~ 10 ㎜ of the welding point.

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[SC07] Electrical Safety

June 30, 12:15 - 13:15
Room: 334, COEX

Moderator:
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KOSHA

[SC07-01]
To Relentless Pursue the Paths to Zero

Ted Vandevis

Electrical & Utilities Safety Association, Canada

Electrical & Utilities Safety Association in Ontario, Canada has approximately 1000 member companies comprising 77,000 electrical and telecommunications workers. In 2000 the Board of Directors had the courage to declare the Association and its members were going to *Relentlessly Pursue the Paths to Zero* and reach zero by 2011.

Back in 2000 the membership consisted of 23,000 member employees, and since that time has grown three times in size to 77,000 employees while the number of lost-time injuries has dropped from 950 to 385 in 2007. Some of the reason for the drop is attributed to the increased volume and alignment of legal, financial and social motivators, however it is felt the most significant reason for the drop in injuries at the same time as a huge increase in membership is by having a vision of zero injuries and developing interventions such as ZeroQuest® to drive injuries down.

This presentation will discuss the paths Electrical & Utilities Safety Association has taken toward zero injuries and the progress the industry has made thus far. 2011 is only three years away and the Association and its members are on track toward zero. Come and hear how we are doing it.

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[SC07-02]
Managing Occupational Risks Caused by Electromagnetic Radiation from Mobile Phone Base Stations

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Occupational exposure to electromagnetic radiation (EMR) transmitted by mobile phone base stations (MPBS) is a complex subject and arouses political, social, economic and scientific incompatibilities.
In current scientific studies thermal health effects are only evidenced in short–term exposures to high levels of EMR. However, there is no conformity regarding the non-thermal adverse effects, which result from long-term exposure to low levels of EMR.
Due to these scientific uncertainties special thought should be given to workers' continuous exposure to high levels of EMR in MPBS near-fields regions.
Challenges concerning occupational exposure to EMR at workplace include, among others, initiatives on risk management. An example of this is the establishment of the European Directive 40 in 2004, which delegates to the employers the responsibility of adopting preventive risk control measures.
Another example is the Brazilian Regulation 09 (NR 9) established by the Ministry of Labor and Employment in 1994, named "Programa de Prevenção de Riscos Ambientais"- PPRA (Environmental Risks Prevention Program), which force employers to implement actions to identify, measure and control environmental risks, including non-ionizing radiations, at workplace.
This study aims at presenting a qualitative research concerning management of occupational EMR risks, held in Brazil in 2007 at a big telecommunication company. At the same time it is a critical analysis on both the EU 40 and the NR 9.
The Brazilian research concluded that the company did not consider EMR as an occupational risk, did not have proper evaluation strategies, nor control measures at the MPBS.
The comparison between the two regulations, EU 40 and NR 09, shows that both lack clear technical recommendations to guide the telecommunication companies on managing occupational risks caused by EMR coming from MPBS.

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[SC07-03]
Introduction of the Correct Use of Lockout Tagout in Brazil

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Lockout Tagout is a safety tool regulated by OSHA 1910.147 (U.S.A.). In Brazil its use is only recommend and it is not normalized by Brazil's Work Department. Most of times it is used only as an assist tool and is partially used, reducing its effectiveness considerably.
The safety and health legislation in Brazil is regulated by a labor law (CLT) with specialized rules ("NR") that details most of the formal work, and is nowadays divided into thirty-three different rules.
The goal of this paper is to suggest specific legislation for energy isolation systems that includes methodologies to provide safe work, following the example of the recently published specific rule for confined spaces (NR33).
The working methods with zero energy started with the edition of the specific rule for work in electricity (NR10), despite Brazilian standard regulations.
This represented an advance for work in electricity, however it caused confusion in other applications where maintenance services are not executed and also in tasks where other energy manifestations are present.
It is necessary to establish a specific rule to standardize work with "lockout tagout" in the whole Brazilian territory in order to avoid damages to the health. It must also provide equipment and facilities where zero energy can be effectively executed.

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[SC07-04]
Application of a Systematic Approach for the Design of Electrical Motors Type of Protection Flameproof Enclosure

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An electrical equipment of equipment group II of category 2 for use in potentially explosive atmospheres must follow an EC-type examination procedure, according to which a notified body must certify that the equipment fulfils the requirements of the directive 94/9/EC of the European Parliament. In spite of the long tradition of the flameproof design, the design is mainly based on empirical knowledge and the basic concept of the design has not changed. A test item for electrical motors type of protection flameproof enclosure which does often not fulfil the requirements according to the standards IEC 60079-1 is the flame propagation test. Almost all of the failures occur due to

flame transmission through the cylindrical joint between motor shaft and bearing shield, although manufacturers fulfil the requirements concerning width of joint and gap between motor shaft and bearing shield according to international standard IEC 60079-1. Using first a systematic approach for design of electrical motors type of protection "d" IIC is useful for solving the current problem. Throughout the whole process of a product development cycle as a systematic approach it is possible to find proper methods which use a flame stop cage or a flame stop blocker. Especially, a "market survey" and a "requirement list" which are essential parts of a systematic approach can help to concrete an idea. The concurrent engineering is preferred at the development stage. This dissertation scrutinized using a flame stop cage or/and a flame stop blocker against flame transmission. This investigation includes reviewing technologies and applications. Based on the gained knowledge by the investigation, a general design methodology employing the two ideas mentioned was proposed.

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[SC07-05]
Methods of Reducing Electromagnetic Susceptibility Applied to Industrial Apparatus

Jeong-Jae Hong

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The use of electronic circuit for industrial machinery makes it necessary for diverse circuit to operate in proximity. Therefore all these circuits affect each other adversely. Recently, as the control circuits of industrial machinery have become smaller and more sophisticated, these circuits are being crowded into small space. Thus the occurrence of industrial accident is increasing because of malfunction of the control circuit composed of electronic components into industrial machinery, in addition electromagnetic interference(EMI) has become a major problem for equipment designers, and it is likely to become severe in the future more and more.

Unfortunately, it has not prepared the regulation of electromagnetic immunity for industrial machinery, which is very huge in Korea until now. The results of Electromagnetic susceptibility tested at KOSHA show the reason that the regulation and test of Electromagnetic immunity for industrial devices is essential.

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[SC08] Social Security

June 30, 12:15 - 13:15
Room: 336, COEX

Moderator:
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[SC08-01]
Ampliation of the Health Services in the Brazilian Companies

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The Specialised Services on Safety and Health at Work (SESMT) are organised by the companies to promote the worker's health and integrity. Such services were launched in Brazil in 1972 due to the pressure of the ILO and some international financial organisms in function of the Brazilian high number of occupational accidents. In 1991, Brazil ratified the Convention 161–Occupational Health Services. The composition of the SESMT in Brazil depends on the economical activity (risk degree) and the number of workers in a company. According to the norm can be part of this service, vocational and graduated professionals. Due to the SESMT rules, it takes place in just about 1.5% of the companies, although it is know that they employ about 35% of the formal country's workforce. However, the other companies (the major part) are not provided with the services, therefore their commitments with Safety and Health at Work (SHW) need to be done by outsourcing professionals, whose quality control is difficult.

The aim of this paper is to show the difficulties and limitations that SESMT faces, to present some statistics of the registrations of these services in the Ministry of Labour and Employment, and also the alterations that have been proposed to improve the text of the current norm. In this sense, it was recently published the Ordinance nº 17/2007, that seeks to enlarge the covering and to turn the services more effective, with the possibility of inclusion of the outsource companies and also the definition of SESMT for a group of companies of the same economical activity at the same district. However, due to the lack of clear

procedures in the new Ordinance, some professionals are claiming that the situation is going to get worse instead of better. It is known that several other alterations are coming up.

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[SC08-02]
To Prevent or To Insure

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There is an ongoing discussion on how much prevention should be done by insurance companies dealing with occupational accidents and diseases. In this paper we present different answers to this question.

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[SC08-03]
Mutual Aid Response Group (MARG)

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1. Concept
   - The concept of mutual understanding, triggered the idea of mutual aid response group - MARG.
   - The concept of mutual aid response group – MARG, first time originated in Chembur industrial area of Mumbai, capital of Maharashtra state, in the year 1980.
   - A legal understanding between Government undertakings M/s. Bharat Petroleum Corporation Limited and M/s. Hindustan Petroleum Corporation Limited to render help to each other in case of emergency.
   - This understanding first time came in operation in the year 1980 and proved very useful in case of handling emergencies.
   - It is a voluntary initiative among the neighbouring units in the industrial pocket.

2. Objective
   - The objective this group is to tackle the emergencies in industries to minimize loss to human life and Properties.
   - To utilize each others resources in mitigation operation.
   - Preparation of green book containing information and resources available with factories. Such as Name of the Expert, available resources (PPE) etc.,
   - Prevention of accidents by safety motivation activities such as awareness campaign, seminar, training, display of hoardings on highways etc.,
   - To assist Government agencies in case of Off-site Emergency.

3. Achievements
   - This group is actively involved in preventing accidents and handling emergencies.
   - The group is organises safety related training program for police authority, fire brigade, revenue officials, managers, supervisors, workers, tanker-truck drivers and awareness programs for neighouring society.
   - This group is handling emergencies even on the highways / roads & godowns.
   - 15 groups of MARG are operational in the state of Maharashtra, India.

4. Recognition
   - The success of MARG in preventing accidents & handling emergencies has been recognized by the National Disaster Management Authority, Government of India, and included above scheme in their guidelines for chemical disasters in their issue in April 2007.

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[SC08-04]
Integrated Preventive Care: Improving the Cooperation between Occupational Health Management and the Preventive, Curative and Rehabilitative Measures Taken by Patients' Local Physicians Using a Regionally Integrated Care Model

Holger Pfaff, Christoph Kowalski, Anne Brinkmann

University of Cologne, Germany

Background:
In Germany, preventive care provided within the occupational setting is largely unlinked to the preventive, curative and rehabilitative care provided by general practitioners and rehabilitation hospitals. Cooperation

between the different physicians and hospitals is poor and models of regional collaboration are rare. This lack of integrated care affects both the individual health of the workers as well as the insurance system.

Objectives of the project:

The first objective of the project is to develop prevention-oriented, indication-specific health pathways for reducing morbidity and increasing the effectiveness and efficiency of care. Special attention is paid to illnesses that are of particular sociomedical relevance. The second objective is to establish precise and stable cooperation between occupational health management and the preventive, curative and rehabilitative care provided by patients' local physicians.

Method:

In the first step of the project, we developed an ideal model based on substantial qualitative surveys of different participants (general practitioners, occupational physicians, patients, health insurance companies, etc.) conducted using various methods (guided interviews, group discussions with experts, the Delphi technique) and on the results of literature research in order to identify best practice both in Germany and abroad. This model will optimize the integration of preventive care. In a second step, this ideal model was then developed into a reality-adapted model, taking the existing regulatory framework into account.

Results and implementation:

The prevention and treatment pathways developed in this project serve as a basis for an integrated care contract. These pathways describe the interaction between the company and the health care system outside of the company. Prevention and treatment pathways are defined in this project using trigger criteria. The pathway describes the steps to be taken in an ideal typical treatment process. It is intended to implement the integrated preventive care model within large-scale German companies.

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[SC08-05]
The Inserction of the Health and Safety at Work in the Social Responsability in the Brazilian Enterprises

Lie Liung, Marcelo Tacitano

Ministry of Labour and Employment, Brazil

The Social Responsibility appeared at some European countries in the 1970's, such as France and United Kingdom, through the call "Social Accountability" that, little by little, would globally be adopted due to the growth of the communication and power of the press.

In Brazil, with the end of the military regime and of political repression, the exercise of the citizenship, until then repressed, wins a great jump through the organized civil society that starts to act actively in the promotion of social politics, among them a great number of non-governmental organizations.

The private companies have as common attributes the generation of jobs, the payment of taxes, the production of goods and services that the society needs and the last but not the least the maximization of the profit. However, starting from 1990's, with the globalisation process, the companies begin to notice that the world is becoming a great village, that it is a product of that village and, therefore, it cannot stop considering the society in their relationships and in their plans mainly in yours neighbourhoods. The respect and the help for society in which is inserted is basic obligations that the company should achieved.

The Social Responsibility is an emerging field in continuous development being the objective of this work to show the Brazilian model of the social balance, standing out that it has as differential the inclusion of the racial issue, besides the progress of the small, medium and big companies in ethics subjects, sustainability, transparency, "sweet spot", and mainly, the synergy in the work to generate a health and safety environment to the workers. It is also pointed out that there are companies in Brazil that have adhered to the Global Compact about the Social Responsibility of the UN.

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[SC09] General Safety

June 30, 12:15 - 13:15
Room: 402, COEX

Moderator:
Antonio Terracina
INAIL, Italy

[SC09-01]
Information and Communication Strategies in Prevention

Sven Timm

German Social Accident Insurance, Germany

Crucial points of successful occupational safety (OSH) work are effective and efficient information and communication. When developing OSH strategies it is essential to include an integrated information and communication strategy. All relevant OSH information such as regulations, guidelines, recommendations, good practice examples etc. have to be transferred to the enterprise level. Communication and information networks should be established. Due to these information and communication needs in OSH in the first step it is indicated to take stock in order to assess the current situation on the existing communication and information systems and data. Consequentially necessary improvements can be identified and deduced. Following this systematic approach the information flow from OSH institutions to public in general and among the OSH institutions, and their functions and role in the communication and information system should be assessed in detail. In this presentation the major elements of the new Latvian OSH strategy which was developed in the framework of an EU financed PHARE assistance project are presented as an example.

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[SC09-03]
New Challenges and Opportunities for Occupational Safety and Health: From the Perspective of a Developing Country and Lessons for the World

William Mukasa Senyonjo

Ministry of Gender, Labour and Social Development, Uganda

With both the rising population and rising unemployment, with a majority of unskilled workforce, the norm is to compromise safety and health.

With limited national budgets for labour, hence limited resources for even basic safety and heath interventions, epidemics such as the recent Ebola outbreak in western Uganda and natural occurrences such as floods in eastern Uganda, which claimed lives and also of those at the fore front of saving lives of others, offer opportunity to indirectly address occupational safety and health concerns in the wave of national emergency.

Further, for those countries like Uganda in the Commonwealth, hosting acclaimed events such as the recently concluded Commonwealth Heads of Government Meeting in Uganda, presents enormous opportunity to address safety and health issues on most fronts.

Therefore, in situations of purported limited resources, the unfortunate occurrences of epidemics and disasters and the excitement of hosting major events, provides opportunity to find resources for occupational safety and health without questioning and use is made of the existing institutions with conscious participation of all

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[SC09-04]
Economic Incentives: Are We Doing the Right Thing?

Werner Simon[1], Hector Upegui[2]

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Workers' Compensation Systems (WCS) have sought different solutions to the question of how economic incentives can effectively achieve two key objectives that is, guaranteeing financial stability for the insurance dynamics, and promoting prevention. This session will present the results of an analysis of ten different WCS across the world and highlight the important elements in designing and implementing pricing systems and economic incentives. This presentation will also reflect on the "divorce" of economic incentives with financing, prevention and compensation of occupational accidents and diseases.

It could be concluded that an ideal economic incentive model should include, in addition to the aspects that will be discussed, two different scenarios: a short-term and a long-term one.

The short-term scenario would include most events arising from occupational accidents and some short-latency occupational diseases, while the long-term one would include long-latency occupational diseases.

The long-term scenario should be exempt of discounts, because their calculation would be technically inadequate and would require other supplementary measures, outside the insurance premium, to encourage prevention.

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[SC09-05]
The Pattern of Personality among Manufacturing Workers Experienced Accident

Muchtaruddin Mansyur, R Sumuel W Manangka

University of Indonesia, Indonesia

OBJECTIVE: Identify the psychological disorders of the workers who experienced accident and others related factors, and its association with the accident frequency.
METHODS: The cross sectional design using self completed questionnaire of Minnesota Multiphasic Personality Inventory-2 (MMPI-2) and individual characteristic data were applied to the 111 workers who have experienced accident. The frequency of accident was obtained from the medical record of the factory clinic. The data was analyzed to look at the personality pattern, the characteristic of the study subjects and its association with the frequency of accident.
RESULTS: The majority of the study subjects (63.1%) have experienced more than one accident and 36.9% of the subjects have experienced accident for the first time. The MMPI-2 test shows that there were seven psychological disorders which their prevalence more than 50% found among the study subjects. These consisting ego weakness (66.7%), feminine (62.2%), anxiety (54.1%), dependent (54.1%), obsessive compulsive (52.3%), family problem (51.4%), and low self esteem (50.5%). The cross tabulation analysis shows that some variables are the risk factors of more than one experienced accidents including over controlled personality (OR=5.9; 95%CI=0.72 – 48.39), male (OR=2.56; 95%CI=1.08 – 6.04), the service up to 5 years length (OR=2.7; 95% CI=1.20 – 6.30), and the age of the study subjects who were more than 30 years old (OR=4.0; 95%CI=1.39 – 11.49).
The result of logistic regression shows that only variable of the study subjects' age as the determining factor of more than one experienced accidents (OR=3.40; 95%CI=0.96 – 16.20)
CONCLUSIONS: Future research is needed to look at the association between the personality of workers and the frequency of accident, which involves more number of the study subjects and more type of job.

KEYWORDS; accident, workers, personality, MMPI-2.

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[SC10] General Safety

June 30, 12:15 - 13:15
Room: 403, COEX

Moderator:
Elaine Posluns
IAPA, Canada

[SC10-01]
Central Recording of H&S Management - A New Tool for the Systematic Supervision of Facilities as well as for Motivation and Information

Torsten Kunz, Sabine Menne

Unfallkasse Hessen, Germany

Supervision services tend to have a capacity problem: as they are responsible for a large number of facilities, on-site inspections can only be conducted at long intervals. Such supervision is limited in its ability to reduce accident figures throughout their area of responsibility.

Wanting to achieve a clear area-wide reduction of accident figures, Unfallkasse Hessen (the public service accident insurers for the German state of Hesse) has developed a computerised system whereby details of health and safety at the various facilities are recorded centrally at annual intervals via questionnaires completed by each facility. As each of the 38 questions comes with information for executives on the technical and legal background of those questions, the procedure also serves to provide information for decision makers. The questionnaires are signed by senior management.

The results of the survey are entered into a database, whereupon they are electronically analysed and are then translated into a traffic light colour scheme that reflects the general quality of organisation. Each facility is sent a letter in response to completing the questionnaire, specifying their classification, accident figures, shortcomings and recommended remedies. Implementation of these

recommendations is monitored, so that some supervisory pressure is created which is largely automatic, while ensuring that the decision makers receive information and are motivated to address the relevant issues.

Supervisors are notified of the results at the facilities under their care. They become active if specific requirements are not implemented or if a facility is particularly poorly organised and if it has high accident figures.

So far, a specially developed questionnaire has been in use for small to medium-sized facilities and is currently being adjusted for use at bigger facilities and schools.

The presentation provides information on the "central recording" system, on its tools, its workflow and on the results and their validation.

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[SC10-02]
Improving Health and Safety for "Very-Small", Small and Medium Enterprises (SME) in France: Two Types of Efficient Tools

Depince Daniel, Maline Joel

Antenne ANACT Basse-Normandie, France

Due to their organization, small and medium enterprises meet some difficulties in integrating health and occupational safety in their practices. Regulatory treatments only apply to companies with more than 50 employees. Yet many "SME" have less than 50 employees. Our interventions have allowed us to implement two different tools that focus the debates on health and safety.
The Enterprise Club: based on the difficult subject of MSD, it gathers 12 companies from various sectors and sizes. Managers or safety agents represent these companies.
The joint commission for health, safety, and work conditions is composed of companies' managers and workers representatives. It deals with health and safety problems in its own specific fields, and is helped by experts to do so. Our intervention was focused on this subject and especially dealt with work hazards in the horse sector and was located in the region of "Orne" (Normandy, France).
These tools are interesting since they both gather decision-makers. Through the organised gatherings and exchanges with their colleagues, they have been able to discover other "good practices" implemented within other companies ? what kind of difficulties could be encountered while implementing a specific action, etc.). The knowledge brought by lecturers during these gatherings allows to create and implement a common safety language and a common view of the subject involved. Melting with workers (for one of the tools) contributes to enhance the dialogue between management and employees.
Based on the principle of a collective action, the enterprise Club and the joint commission for health, safety and work conditions generate the sharing and gathering of actions and, thus allowing to implement new actions which could not have been invented otherwise. At last, this sharing permits to set up a coherent action within the companies involved, in order to improve health and safety.

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[SC10-03]
Risk Management in SMEs - Practical Guide and Help in Internet

Christian Schenk

AUVA, Austria

Workplace Assessment and Risk Management is one of the key demands in the Framework Directive fort he Improvement of Safety and health at work designed by the European Union. In Austria this demand was met on legal basis by the "ArbeitnehmerInnenschutzgesetz – ASchG" (Law for the Protection of Workers at Work).

Every enterprise – down to one employee – has to identify and evaluate risks at work and take care for appropriate measures against those risks. This whole process of risk assessment has to be documented according legal regulation. In case of revision by Labour Inspectorate or in case of accident this documentation plays an essential role, rendering the OSH – policies of the enterprise.

Especially small enterprises do have problems transposing these legal requirements about risk management. For helping especially SMEs in this task AUVA worked out together with the social partners, approved by Labour Inspectorate, an internet platform (www.eval.at) designed to deliver an easily understandable and praxis oriented help for fulfilling legal demands.

Key point of the site are the so called "Grundevaluierungen" (basic documents), which are about 450 documents for typical machines, workplaces and activities. These documents deliver on the one hand a basis "check" – identification of hazards – and form on the other hand the basis of the enterprise´s own documentation. Furthermore the site offers special (hazard oriented) checklists, an overview of the legal demands, special

documents for "noise" and "explosion", a so called "Guided Tour" with general information and an encyclopaedia of about 500 notions related to safety and health at work.

The site is well known in Austrian enterprises and used as a standard reference for carrying out workplace assessment and documentation.

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[SC10-04]
The Correlation between Human Health and the Natural and Constructed Environment

Sonia Marino[1], Maria Donisi[2], Renato Gurin[2], Marco Testasecca[1]

[1]M.I.N.E, [2]ISPESL, Italy

On June 2007 WHO issued their first report on impacts of environmental conditions on human health, "Country profiles of the environmental burden of disease". The report highlight that into WHO region Europe, up to 20% of deadly disease could be avoided intervening on environment.

Further papers demonstrated that, in highly technologically developed countries the air available in non industrial buildings (schools, offices, houses, etc.) is more polluted then the air outside and, adding to this that these are the places where population lives up to 90% of the time, this data highlight the importance and extension of the issue.

Pollution, outdoor and indoor, is the original cause of many pathologies and psycho physical sicknesses of human being; but human being and their activities have been demonstrated to be the main factors of the presence of the above mentioned polluting agents.
This paper extend the principles on which Ergonomic physic is based, which is mainly focused on the correct design of working emplacement and possible critical situation which non ideal microclimate condition may contribute to create in any given working place, ignoring issues concerning and deriving from a wrong design of the shell , both for human health and environmental equilibrium.

This study highlight, thanks to the cross check of data from various international studies, a strong connection existing between health and psycho physic well-being of human being and a salubrious environment, outdoor and indoor; but, also, the existence of a vicious circle where the outdoor environment degradation lead to buildings indoor pollution and non eco-sustainable buildings new erections worsen the outdoor environment.

The challenge for the future is to guard natural environment and to achieve buildings suitable for human being needs and demands and in harmony with natural environment.

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[SC10-05]
The Effects of the Organizational and Personal Characteristics on Occupational Safety

Ki Sik Kim

KOSHA, Korea
Recent reviews of occupational safety and health literature emphasize the influence of organizational factors. Using the current studies on the relations of the organizational climate and the performance, this study attempted to develop the mechanism of the effect of the safety climate as the organizational characteristics, and the safety knowledge and safety motivation as the personal characteristics on safety performances such as safety behavior and occupational accidents. It replicated the safety climate - safety behavior model of Griffin and Neal(2000) to Korean workers, and expended the model to accidents. Griffin and Neal's model fitted well, and also provided the more appropriate model to Korean workers. In the expended model applied to total workers, the relations from safety behavior to accidents are not significant. But in the model applied to productive workers, which has higher risk level, it revealed a significant path. Because of the rareness of accident and the reverse effect of accident to safety behavior, the effects of safety behavior on accidents are low

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Tuesday, July 1

XVIII World Congress on Safety and Health at Work

Global Forum for Prevention

Safety and health at work: A societal responsibility

Technical Session

Technical Session

Technical Session IV
[TS04] Strategies and Programmes of Safety and Health for the Future

July 1, 09:00 – 12:00
Room: 101/102, COEX

Moderator:
Andras Bekes,
Ministry of Social Affairs and Labour,
Hungary

[TS04-01]
Promotional Framework for Occupational Safety and Health

Seiji Machida

ILO

Occupational Safety and Health (OSH) has been a core programme f the ILO since its establishment in 1919. Over 20 international Conventions directly addressing OSH have been adopted providing international standards. In 2006, Promotional Framework for Occupational Safety and Health Convention (No.187) was adopted providing a comprehensive promotional framework for OSH. The Convention calls for the promotion of national preventative safety and health culture and periodic review of the measures for implementation and ratification ILO Conventions in the field of OSH. The systematic improvement of national OSH performance should be sought through the formulation of national OSH policy, national OSH system, and national OSH programmes. Active participation of social partners in the formulation of national OSH programme is essential for the successful development of practical programme. The compilation of relevant information in the form of national OSH profile is a logical step for reviewing the progress and identifying priority areas for action for reinforcing national OSH system and programme. The national OSH profile also serves as a tool for sharing the information on national OSH situation including OSH data and OSH system information among all the stakeholders within the country. The information compiled as a national OSH profile should be used also for the review of the progress in the later year. By comparing the national OSH profiles compared at different in time, we could measure the progresses through OSH data (such as occupational accidents and diseases) and OSH system performance (such as OSH straining courses and inspections carried out). The ILO has been collaborating with its member States for the implementation of the systems approach to occupational safety and health in line with the Convention No.187. Recent developments will be reported.

[TS04-02]
Occupational Health and Safety: Key Instrument for the Promotion of Sustainable Jobs and Sustainable Enterprises

Cecilia Brighi

Italian Confederation of Trades' Union (CISL), Italy

Human losses deriving from non promotion of occupational health and safety measures are dramatic and costs for society are also extremely high. OHS is not only a fundamental human right. All the figures show that there is a strong moral and economic case for improving the situation in the area of occupational safety and health. Preventing occupational accidents and diseases should therefore be given the highest priority at enterprise, national and international levels.

Sustainability and safe jobs cannot be not anymore discretionary issues in the enterprise strategies. These issues are not against profitability of companies. On the contrary more and more they become the new benchmark. Occupational health and safety have a strict link with sustainability, with climate change and with the need for the creation of a shared participatory culture.

International institutions, governments, employers, workers organizations have to play a specific role to guide such changes to respond to the new challenges of building sustainable development strategies that enshrine and combine both the issue of health and safety and the issue of climate change.

We need to create joint systems to manage the challenge of OHS and of the environmental partnership at wok place. Procedures to define target setting, implementation, evaluation and monitoring systems can be very helpful for the promotion of OHS and environmental issues and to create a new culture in which not only injuries and accidents are avoided but also the highest degree of physical, mental and social well being of the work is implemented.

The trade unions are fully committed to participate and are responsible actors in the implementation of the strategies enshrined in the main ILO conventions on Health

and safety and in the development of the new using at different levels the instrument of collective bargaining, social dialogue and innovative industrial relations that enhance workers participation in the decision making of companies to build safe works, sustainable enterprises, sound productivity and competitiveness strategies that, while aiming at increasing the process and product qualities, does not shrink working conditions and workers rights along the whole production chain.
This comprehensive approach that includes the whole production chain is crucial, particularly for categories of workers in small enterprises, in the informal economy and in contract jobs that are particularly vulnerable to occupational hazards and risks.

The integrated approach on health and safety need to be built on the existing promotional framework, but cannot be used in isolation, unrelated to the other existing ILO instruments on occupational safety and health. On the contrary, it should enshrine the promotion of the existing ILO instruments on occupational safety and health and should contribute to the ratification and effective implementation of the other key occupational safety and health conventions, in particular the occupational safety and health convention (N° 155).
The ILO should therefore promote a ratification campaign accompanied by a program of technical assistance to help member states to overcome the obstacles to ratification.

[TS04-03]
Making National Programmes and Strategies on OSH more Effective

Antonio Peñalosa

International Organisation of Employers, India

As an international organization representing employers, the IOE is conscious of the importance of occupational safety and health. Effective OSH programmes and strategies are not just about enhancing a company's productivity but also about preserving life itself.
Occupational safety and health should therefore be accorded the highest priority on national agendas and governments should undertake concerted action to foster political commitments at the highest levels in order to develop effective national strategies. These strategies should be developed through tripartite consultations and dialogue in order to build consensus on what needs to be done in order to improve occupational safety and health in the country. Of critical importance is the need to bear in mind the specific circumstances of the country and to adopt a preventative safety and health culture and a management systems approach at enterprise level. A national OSH profile is necessary in order to ascertain what needs to be done.
The IOE strongly supported the adoption by the International Labour Conference in 2006 of the Promotional Framework for Occupational Safety and Health Convention (No.187). This signals a new approach to standard setting as it is non-prescriptive. The call for each member state to develop, maintain and periodically review a national policy, a national system and a national programme will undoubtedly enhance the contribution and participation of the workplace stakeholders as the representative organizations of employers and workers will take part. Further, it is important that adequate resources are allocated by the ministries of finance so that the necessary infrastructure or system to implement it is in place. Having decided on the infrastructure, what needs to be done is to come up with objectives, priorities and means of action. It is crucial that the tripartite constituents take part not only in the design, implementation but also in the monitoring and evaluation of programmes.

[TS04-04]
Great Britain's Strategic Programme: "Fit for Work, Fit for Life, Fit for Tomorrow"

Jane Willis

Health and Safety Executive, United Kingdom

This paper provides an overview of the programme of work developed by the Health and Safety Executive (HSE) in the past three years in partnership with local authorities and other key partners to tackle the principal causes of ill-health and injury at work in Great Britain (GB). It sets out our targets and records our achievements. The annex provides greater detail of the activities undertaken in GB in terms of the primary causes of injury and ill-health in the workplace.

[TS04-05]
Strategies and Programmes of Safety and Health for the Future: The Case for Nigeria and Other Developing Economies

S.D. Kassim

Federal Ministry of Labour, Nigeria

The importance of OSH goes beyond the protection of the national workforce as this constitutes the majority and most active population of the nation and their state of wellbeing is very significant in determining the general wellbeing of

any nation. Nigeria recognizes this critical role of OSH in national socio-economic development and the Constitution of the Federal Republic of Nigeria that "the State shall divert its resources towards ensuring that health, safety and welfare of all persons in employment shall be safeguarded and not endangered or abused".

The government of Nigeria has remained committed to this provision even in the current economic expansion plan under Vision 20.20-20 and the President's 7-Point Agenda.

Emerging economies in Africa and elsewhere as exemplified by Nigeria confront an ever-increasing wave of occupational hazards occasioned by work. Into the future, the quest for rapid economic expansion to meet developmental aspiration will further expand the spectrum of occupationally related hazards in transportation, energy, manufacturing, petroleum, mining and agriculture.

Globalization, new exposure patterns and the dumping of discarded technologies will add to the burden of the existing labour safety inspection and enforcement services. Political, structural and managerial impediments are already hampering the efficiency and effectiveness of inspection systems who act sometimes antagonistically and in the process, undermine and weaken existing inspection systems.

Targeted action by the international and national labour administration systems such as the ILO, WHO and UNDP and National Governments through technical assistance, development of policy/standards, structured advocacy, awareness raising and international training and dialogue is required.

At the national levels integration of occupational safety and health services which seek to protect the worker from hazardous working environment and employment services which seek the most optimum working conditions, including integration of employment cadres should be pursued more vigorously to remove the rivalry between labour administrative cadres. This way the most efficient deployment of human, material and financial resources competing with other developmental demands is made. The instrumentality of social dialogue, bipartism/tripartism and transformative mediation together with sustained training should be deployed to address both foreseen and unforeseen safety and health challenges of the future.

[TS04-06]
Progress of the National Occupational Safety and Health Programme

Yoshiyuki Fukuzawa

Ministry of Health, Labour and Welfare, Japan

Japan formulated the first five-year national programme on occupational safety and health (OSH) in 1958 and the 11th national programme has been launched in April 2008. During this fifty years period, we have achieved drastic decrease of occupational accidents and diseases. We believe that the national programmes and the Industrial Safety and Health Act, which was promulgated in 1972, contributed a lot to this drastic decrease by well working of complementary effects. The national programmes have been formulated by analysis of OSH level at that time, achievements of the previous programme and taking systematic consultation process with various stakeholders. National OSH policy was clearly set in the programme and the policy was shared among related ministries, employers associations, labour unions and the other stakeholders. They shared the issues, priorities, targets and measures. The programmes contributed to face the government and stakeholders toward the same directions and enhance cooperation between each other for addressing the common issues. In 2007, Japan became the first country to ratify the ILO Convention concerning the Promotional Framework for Occupational Safety and Health (No.187, 2006). The latest 11th national programme was formulated by full reflection of principles of the ILO Convention No.187. Management system approach was adopted at the national level and it encourages stakeholders to formulate their own OSH programme or plan by the same manner. It is highly expected that continuous improvement of OSH would be observed by making PDCA cycles function from national level to workplace level.

[TS04-07]
Public Policies for Safety and Health at Work in Mexico 2007 - 2012

Alvaro Castro

Ministry of Labour, Mexico

Dr. Castro will first refer to the status of safety and health at work in Mexico at the beginning of the current administration.

Then, he will briefly describe the eight projects that are part of the Public Policy on Safety and Health at Work 2007-2012, which are:

1. Establishing a National System on Safety and Health at Work;

2. Modernizing standards and regulations on safety and health at work;
3. Potentializing the Management and Self Evaluation Program on Safety and Health at Work;
4. Developing the National Information System on Occupational Accidents and Diseases;
5. Strengthening mechanisms for consultation and risk prevention;
6. Financing prevention of occupational risks;
7. Encouraging training and skilled technical education on safety and health at work, and
8. Strengthening review processes, verification and labor inspection regarding occupational safety and health, which also requires revision and updating of the standards framework on this matter.

Finally, he will describe the progress made during the first eighteen months of the current administration, such as:

- Reactivation of Consultative Commissions on Safety and Health at Work, at national, state and Federal District level.
- Implementation of a web site for the Consultative Commissions on Safety and Health at Work at national, state and Federal District level.
- Development of a Study on the Impact of the Modification of the Insurance Incentives related to Occupational Risk Reduction.
- Publishing of new seven Mexican official standards on safety and health at work, for public consultation.
- Development of the Project on the Official Mexican Safety Standard on Underground Coal Mining.
- Development of nine procedures for assessing conformity of verifying units, testing laboratories and certification entities.
- Design of an information tool called "Search engine" aimed at determining standards to be applied to the enterprises and their OSH experts with regard to occupational safety and health.
- Integration of a Sub-commission[1] and eleven working groups about the Modification of the Occupational Disease Table.

1 Sub-commission of the National Consultative Commission on Safety and Health at Work (COCONASHT)

[TS04-08]
Developing a National WSH Strategy: Singapore's WSH2015

Ho Siong Hin

Ministry of Manpower, Singapore

Singapore's workplace safety and health (WSH) landscape went through major changes in 2005 with the launch of a new WSH framework. The framework was designed to guide the efforts of all stakeholders towards achieving and sustaining continuous improvement in national workplace safety and health standards.

To implement the framework, the performance-based Workplace Safety and Health Act was introduced in 2006. This was complemented by our national WSH roadmap – WSH 2015. Under WSH 2015, a national vision of a safe and healthy workplace for everyone and to make Singapore a country renowned for best WSH practices was established. Four key strategies were also identified to drive Singapore towards vision. These are building strong capabilities to better manage workplace safety and health; implementing an effective regulatory framework; promoting the benefits of WSH and recognizing best practices; and developing strong partnerships locally and internationally.

Many initiatives and action plans were rolled out to implement the four strategies. They include the strengthening risk management framework and the capabilities of our WSH professionals, effective and targeted interventions, a national campaign to raise awareness of WSH, a national WSH awards to recognise the best, a programme to integrate safety and health into business of small and medium enterprises and forming key partnerships within the region.

Moving forward, it is crucial for Singapore to remain cognisant and responsive to emerging trends and challenges. A strong and all-encompassing WSH culture only becomes possible and sustainable when all stakeholders are committed and involved in making workplaces in Singapore safe and health for everyone.

Technical Session V
[TS05] New Challenges and Opportunities in Occupational Safety and Health (II)

July 1, 09:00 – 12:00
Room: 104/105, COEX

Moderators:
Doan Minh Hoa,
Ministry of Labour, Vietnam
Helmut Ehnes, ISSA Section Mining

[TS05-01]
Increasing Safety Imperative vs. Technological Progress in Basic Industries

John McEndoo

ISSA Mining Section, AngloGold Ashanti Limited, South Africa

This presentation firstly discusses the ever-increasing pressures for companies in basic industries, mining in particular, to improve safety and health performance. Areas covered include both moral and business related issues.
Secondly, the success of various safety and health improvement initiatives is discussed. Popular opinion has moved to favor behavior-based programs, and the author contends that whilst there have been successes, mainly in the first world, the vast majority of "basic" industries are located in the developing and sometimes third world, where the success of these programs has been much less successful.
The presentation suggests that one guiding principle has not been utilized as effectively as it should, and the presentation shows that the application of the hierarchy of controls has been enduringly successful in most areas of safety and health improvement initiatives, providing sustainable improvements in safety and health performance.

[TS05-02]
Taking Over Responsibility World Wide: OSH is Everyone's Responsibility

Vincent McNeilly

Akzo Nobel, United Kingdom

"Taking over Responsibility World Wide" or as I would see it - taking responsibility. occupational safety and health is everyone's responsibility and in today's global village that responsibility encompasses the office, warehouse, factory, laboratory, customers premises and driving a car, these are the environments that make up our world of work.

AkzoNobel is a global leader in Coatings and specialty Chemicals and as part of AkzoNobel my Business Unit is the market leader in high performance Coatings for the Marine, Heavy Industry, Yacht and Aerospace markets, known by our customer base as International Paint

International Paint is a global organisation; it has 20 manufacturing sites and employs 5200 people globally.

We have manufacturing facilities, research laboratories, offices, warehouse areas we control to the high standards set within the Business Unit and AkzoNobel. One fifth (1/5) of our workforce operate in customers premises i.e. shipyards, construction sites, chemical and petrochemical plants, aircraft hangers and boat yards, interestingly our customers premises are acknowledged as high hazard working environments.

Shipbuilding and construction are recognised as high risk areas where accident rates are high.

In the past twenty years, within our business unit, we have had 6 people lose their lives and several more sustain serious injuries in our factories and on our customers premises…these are unacceptable, as in any organisation that stands fully behind the edict that it is every employee's right to go home alive and healthy from work.

In 2005 we embarked on a project to develop a process to continually improve and sustain occupational safety and health.

It has taken two years to formulate a vision and develop a strategy for occupational safety and health within our business unit.

The process involved the creation of an HSE executive team (members of this team are executives and senior managers) to formulate improvement processes and feed the improvement recommendations to the executive board. These recommendations are based on hard data produced through project teams using the tried and trusted process of the Deming cycle (Plan, Do, Study, Act) and addressing the socio-psychological issues that effect up to 95% of our daily decisions and discussions in our work. Behaviours and attitudes play a major part in our daily working routines and must be addressed.

The HSE executive developed the vision and strategy…our strategy is very important in achieving our vision.

the need to understand the occupational safety and health process in the BU was critical to developing the strategy, as can be seen by the system map, a process flow of safety through our organisation.

Our vision - Our ultimate goal is to eliminate all accidents and incidents in the workplace, this can only be achieved by;

- Active leadership that is visible across all levels in the organisation

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- The sharing of good safety practices across the organisation
- The involvement of everyone in continuously improving safety performance
- The designing and maintenance of safe facilities and processes
- The development of safety skills of all employees
- The support of a global network of professional safety advisors

To drive responsibility for occupational safety and health throughout our business, these are key elements we feel are important and essential to ensure continued improvement and success in occupational safety and health – from the general manager cascading down into the heart of the business, our people are responsible for occupational safety and health

In today's world of work we all have a duty to ensure occupational safety and health is everyone's responsibility.

[TS05-03]
The New Labour-Perspective: Working Everywhere at any Time: New approach for OSH Needed

Ulrich Klotz

German Union for the Metal-Industry, Germany

Intangible values play an increasing role in the economy and society. An economy whose most important product is information that is easily multiplied functions according to rules that are different from those in an economy where material goods are manufactured and traded under the application of traditional raw materials such as capital and labor. With the advance of computer networks and digital products, new forms of added value and new enterprise models are emerging. Similar to the transition from agricultural to industrial society, the concept of work is transforming itself fundamentally in the course of a multi-facetted process.

Since around the middle of the Eighties the implication has been that, with the assistance of the technology which decisively characterized the socio-economic development of the 20th century in its final years, many activities could be liberated from the obligations that industrialization brought with it.

Accompanying this, today's understanding of work as 'spatially and temporally established gainful employment that is to be performed continually' has been especially transformed. Work is decaying in many forms, and the boundaries between work-time and free-time, work location and residence, learning and working, dependent and free-lance employment, producers and consumers as well as between operations and branches are becoming increasingly frayed.

Everywhere where categories such as work-time, work location, work performance and workplace are blurred, the foundation of a structure that characterizes our behavioral patterns and value systems more than we are consciously aware and which is made up of agreements, norms, rules, laws, organization forms, structures and institutions is crumbling. Institutions such as labor unions, for instance, whose actions are related to the industrially characterized definition of work, are being stealthily robbed of their traditional business fundamentals and presented with new challenges. • • •

[TS05-04]
The Human-Perspective: Aging Workface Ergonomics and Safety for Construction Machines

Daniel Roley

Caterpillar Inc., United States

Safety and comfort for operators of construction machines has always been an important consideration in the design and development of machines. As the workforce ages, becomes less physically fit, and must work until an older age, the ergonomics for operating construction machines becomes even more important. Construction machine manufacturers are responding by making machines easier and safer to operate, with improved ergonomics to compensate for some of the physical changes that occur with age.

The first challenge is the daily maintenance before beginning to operate construction machines. To make the daily maintenance easier, maintenance points are being moved to ground level so that it is not necessary to climb to reach these points.

The second challenge is to access the operator station on construction machines. To make access easier, several improvements are being implemented for access systems:

- Angled ladders on small machines

- Stairways on medium sized machines
- Elevating access platforms for large machines

To compensate for the reduced strength and range of movement, control efforts are being reduced. Automated machine functions, such as bucket loading, reduce the physical work required to operate machines. CCTV (closed circuit TV) and additional mirrors reduce the time that the operator must turn in the seat for viewing around the machine.

To compensate for eyesight challenges for reading labels on machines, more symbols and pictorials are being used to minimize the need to read small print.

Advanced suspension seats position operators in an optimal position relative to the controls and minimize shock and vibrations. Remote controls can enable operators to run machines from a controlled environment off the machine.

[TS05-05]
The Knowledge-Perspective: New Technology and Automatization Requires Life Long Learning at Work

Marie Larue

Occupational Health and Safety Research Institute in Canada (IRSST) /ISSA Education and Training Section

Over the past 15 years many efforts have been made to promote education, training and teaching as a strategic component of the risk prevention. During this period many initiatives have been led by Education and Training Prevention Section of the International Social Security Association (ISSA) to promote the development of a framework for cooperation between institutions involved in occupational health and safety (OHS) and educational-vocational training community. The Quebec City Protocol and the Berlin Declaration define principles, strategies and measures associated with the concrete process designed to integrate OHS competencies into the educational process for a given occupation.
In the context of the ongoing and fast introduction of new technologies like nanotechnology, what are the challenges and opportunities in terms of OHS training, especially when the scientific knowledge about risks exposure is not well enough documented ?
The IRSST has a relevant contribution in the identification of potential hazards, safety control and prevention aspects related to nanoparticules. On the basis of the actual knowledge, it is strongly recommended to inform the employers and the workers about these issues even in the absence of a strong body of knowledge. This initiative is considered as the first stage of life long learning at work. Then the workplaces will be able to build programs specifically designed to prevent occupational and safety problems related to nanoparticules.

[TS05-06]
Employers and Employees in Active Partnership: The European Social Dialogue

Laurence Boens

SCR-Sibelco NV, Belgium

European social dialogue is a unique and indispensable component of the European social model, with a clearly defined basis in the EC Treaty. It refers to the discussions, consultations, negotiations and joint actions undertaken by the social partner organisations. Art. 139 of the EC Treaty provides the possibility for management and labour to enter into contractual relations and notably to sign European Social Dialogue Agreements.
At European level, social dialogue takes two main forms - a bipartite dialogue between the European employers and trade union organisations, and a tripartite dialogue involving interaction between the social partners and the public authorities, combining the values of responsibility, solidarity and participation.
European social dialogue has resulted in a variety of outcomes, including the adoption of over 300 joint texts by the European social partners. Amongst these, several handle issues of Health and Safety at Work.
The NEPSI industry sector organisations and their counterpart trade union federations negotiated a multisectoral social dialogue Agreement between 1 September 2005 and 2 February 2006.
The European Commission supported the project, qualifying it as innovative: indeed, where European social dialogue agreements are usually sectoral or cross-industrial, this one is the first of its kind.
Two working groups were set up for the negotiation: one Steering Working Group to draft the Agreement and discuss political aspects, and one Technical Working Group (made up of producers and consumers of products and materials that contain crystalline silica) to draft the technical annexes of the Agreement, especially the Good Practice Guide. Experts from national health institutes – the HSE (UK), the BerufGenossenschaften (D) and the Instituto Nacional de Silicosis (ES) – supported the technical working group.
The final text was unanimously approved by the negotiating Parties and the negotiations ended on 25 April 2006 with

the signature of the Agreement, in the presence of Commissioner Spidla.

[TS05-07]
Are OSH Policies and Strategies Effectively Responding to Emerging Challenges and Realities of International Migration?

Piyasiri Wickramasekara

ILO

Most of the world's migrants, estimated at 191 million in 2005 by the UN Population Division, are migrant workers (94 million according to ILO estimates) - those seeking work - and their dependants. This means that international migration is very much a decent work and labour market issue.

Occupational safety and health (OSH) is a key issue in achieving decent working conditions for all. Migrant workers are entitled to equal treatment with national workers in terms of conditions of employment, including health and safety at work, regardless of whether they work or not legally. Nevertheless, the practice is different and migrant workers tend to pertain to the vulnerable labour force group and work at greater risk. Firstly, migrant workers are often over- represented in high risk and hazardous sectors of the labour market. They are more likely to find employment in the so-called 3 D jobs – dirty, dangerous and demanding. Secondly, the reality is that many migrant workers are willing to earn as much in as short a time as possible; for which reason migrant workers may accept working overtime and in poor safety and health conditions. Thirdly, they suffer from a lack of information, knowledge and training in the occupational safety and health regulations applied in the destination country due to language and cultural barriers. Employers should provide all employees, whatever their origin, culture, habits, language, with the appropriate safety training to enable them to pursue their job without risk of illness or injuries.

Migrant workers may be subject to face greater health and safety risks due to their relatively short period of employment and their exclusion from or insufficient social security coverage under short-term contracts. This is particularly of a concern in the current context of increasing interest given to temporary and circular migration programmes as an option to maximize the mutual benefits of labour migration for development of both destination and origin countries. In addition, these programmes target labour shortage in economical sectors with greater risks of accidents and occupational diseases, such as agriculture, construction, mines, and the hotel industry. Safety and health in agriculture relates to hazards connected with the use of agricultural machinery and equipment as well as hazards which arise in connection with dangerous chemical substances and pesticide. Workers in construction and mines endure a high rate of fatal accidents and injuries, as well as the risk of disease and cancer due to the use of dangerous work substances.

Ever since it was founded in 1919, the subject of occupational safety and health has been at the heart of the ILO work, including its standards-setting activities. The ILO has developed a wide array of OSH instruments – more than 70 Conventions and Recommendations, and over 30 Codes of Practice- covering general provisions, specific risks and special economic sectors where migrant workers are largely employed. All ILO standards apply to migrant workers (whatever their status), unless otherwise specified. "Decent work must be safe work" was reiterated at the 91st Session of the ILO International Labour Conference in 2003. OSH for migrant workers, including domestic workers, need to be promoted and integrated in labour migration policies in accordance with the ILO Multilateral Framework on Labour Migration and international labour standards.

Technical Session VI
[TS06] Safety and Health Management Systems (II)

July 1, 09:00 – 12:00
Room: 103, COEX

Moderator:
Leo Carey, National Safety Council, United States

[TS06-01]
Occupational S&H Management System in Korea [KOSHA 18001]

Woo Bong Lee

KOSHA

Safety and Health(S&H) in the workplace has been recognized as an essential value with quality and environment in business operation. And recently, S&H paradigm is changing from compliance system by government to self-regulatory system by organization.

Keeping pace with this international trend, KOSHA has developed OSH-MS(System) named as KOSHA 18001 for the continual improvement of S&H performance with PDCA cycle by the self-management of S&H activities in the organization.

In this presentation, author gives various information about the system introduction and shares valuable experience in System operation.

- What should be considered in System introduction
- What are main components in System and Key contents of each component
- What are the positive outcomes of System performance and issues in operation

Finally, several key factors are suggested for the successful System settlement in the organization.

[TS06-02]
Safety Professional Competencies Needed for Today's Worldwide Workplace Safety & Health Challenges

Warren Brown

American Society of Safety Engineers, United States

The American Society of Safety Engineers' members – occupational safety, health and environmental professionals working worldwide are committed to protecting people, property and the environment as are the people attending the conference. The ILO estimates that work related incidents and diseases kill 2.2 million workers each year and cost approximately 4 percent of the world's GDP. A World Health Organization (WHO) report "Regional Framework for Action for Occupational Health 2006-2010" indicates that little has changed over the past 10 years. The same report notes that prevention programs, employing safety professionals, safety training, and networking can help reduce these incidents. We must all work together to develop and implement programs worldwide aimed at preventing workplace injuries and illnesses – if not people as a whole and our worldwide economy will suffer.

Our cultures, languages and governments may differ, but the desire for excellent SH&E performance transcends these differences --applying to all people, businesses & organizations.

To achieve this we must continue to focus on mutually defining and building competencies for the SH&E profession. A safety, health and environmental professional through academic preparation, work experience, and accredited certification or licensing has mastered and applies a recognized body of knowledge for the prevention of injury, illness, property and environmental damage. And so as an SH&E professional we must bring certain competencies to our workplaces. The four competencies that will be discussed are: foundation skills, core competencies, technical & professional skills and executive competencies.

As more countries align with the WHO Global Plan of Action to increase workplace safety and see more countries push for developing safe and healthy workplaces the demand for safety, health and environmental professionals will continue to grow. ASSE will continue to join with you and others to be a key resource for not only providing the framework for safety professionals but a guide to the competencies needed for the future ahead.

[TS06-03]
Leadership-The Business Case for Health and Safety

Maureen Shaw

Industrial Accident Prevention Association, Canada

The value of workplace safety—whether it "pays"—depends on its position in the broader continuum of health, safety and wellness.

The further a workplace progresses toward a comprehensive workplace health and safety managed system, the greater its potential return on investment. For instance, "compliance" based programs, located near the beginning of the continuum, are typically reactive and strive to adhere to relevant laws. These programs enable the workplace to avoid penalties and fines. Further along the continuum, "performance" based programs are directed beyond compliance toward business improvement. They enable the workplace to reduce compensation premiums, reduce injury costs, improve safety metrics, enhance production, etc. Further still, healthy workplace programs in pursuit of "excellence" make a long-term commitment to loss prevention. These programs provide a competitive advantage, which adds economic value and contributes to other business measurements, such as share price and brand value. Each of these approaches—compliance, performance and excellence—offers progressively greater benefits to any organization.

Many companies, large and small, are starting to assess their position on the continuum, and quantify the business advantage of investing in health, safety and wellness. In her presentation, Maureen Shaw will draw on IAPA interviews with leaders of North American companies that have highly evolved programs. These leaders discussed

their health, safety and wellness goals, the contribution of health, safety, and wellness to overall organizational success, and returns generated to date.

[TS06-04]
Internal Corporate Social Responsibility and Improved Productivity

Mark Pritchard

Work and Pensions Committee in House of Commons, United Kingdom

[TS06-05]
Building a Safety Culture

Tom Fisher

Office of Federal Safety Commissioner, Australia

Objectives

The Australian Government is committed to a safe and healthy building and construction industry. One of the FSC's responsibilities is overseeing the Australian Government Building and Construction OHS Accreditation Scheme (the Scheme), with the result being that Australian Government agencies will only contract with construction companies that demonstrate a high level of commitment to OHS.

In addition to using its power as a major procurer of construction services to enhance OHS performance, the Australian Government is committed to working cooperatively with industry to promote cultural change.

The XVIII World Congress on Health and Safety provides a unique opportunity for the FSC to highlight the key achievements of the Australian Government and the Scheme in promoting improvement of OHS in the industry.

During his presentation, the FSC will also provide information on other OHS initiatives the Australian Government has been developing such as:

- the collection of data on OHS performance;
- safe design in the construction industry;
- ensuring the commitment of senior management to OHS;
- investigating how subcontractors can take a more systematic and effective approach to OHS; and
- working with other Australian Government agencies to strengthen their capacity to deliver effective OHS outcomes as a model client.

Expected outcome

The FSC's presentation "Building a Safety Culture" will provide international delegates with an understanding of Australian Government OHS initiatives which are bringing about cultural change in the building and construction industry.

[TS06-06]
Asiana Airlines-Aeromedical Management System

Hyun-Mee Han

Asiana Airlines, Korea

I. Aviation health Management System
(1)Health Policy : ①Offering the Disease Prevention & Systematic Health Management for employees ②Clearing the Work-related Risk Factors & Improving the Healthy Working Environment ③Establishment of Aero-medical Supporting System for the Passengers ④Increasing Productivity by Improvement in Health Welfare
(2)Goals : ①Promoting the Aviation Safety by Increasing Physical, Mental and Social Well-being of the Employees ②Increasing Productivity by Improvement in Health & Safety of Work Environment
(3) Medical Function : ① Asiana Medical Clinic ②AME Institution ③Physical Exam Facilities For Workers (Ministry of Labor) ④Facilities for Medical Treatment
(Medical Insurance) ⑤BLS Training site (KACPR)

II.Activities for Aviation Health Management
(1) Physical Exam & Certification: For issuance of medical certification for aviation operating practitioners / For pre-employment and pre-disposition(2)Counseling and nursing provision (3)Health Education and Operating Training(4) Medical services for sick Passenger (5) Occupational Health (6) Management of On-board Medical Equipment (7) Others: Clinical Activity / Management of Working Environment /Professional Education & Job Training

III.Research: 1 『 Medical Problems in Civil Airline Pilots : A 9-Year Review(1998-2006)*May 12-15, 2008 AsMA 79th Annual Scientific Meeting* 2. 『Analysis of In-flight Medical Emergencies in Civil Airlines 』 *May*

13-17, 2007 AsMA 78th Annual Scientific Meeting 3. 『Beneficial Effect of Weight Reduction in Overweight ; Improvement risk factors of cerebro-cardiovascular diseases』 *April 26, 2006 Asiana Airlines Medical Services Conference*

[TS06-07]
Successful Safety and Health Management System in Enterprises

Dale Outhous

DuPont, United States

DuPont has developed a safety and health management system that is based on our experience and that of other enterprises throughout the world. Designed to impart strong operating discipline in the areas of workplace safety, this system, in conjunction protective equipment and apparel, is having positive and sustainable results in a wide range of industries. This presentation discusses the DuPont Safety Management System which is grounded in operational discipline and based on the 22 Essential Elements of Safety. The 22 Essential Elements of Safety are composed of two primary groups: 1) elements that help create a sustainable safety culture, and 2) elements that encompass operations risk-based behavior in terms of technology, personnel and facilities. Central to the implementation and interaction of the elements is the unwavering commitment of top level company management.
Creating a sustainable safety culture requires strong leadership, the right structures and focused action. Leadership must demand and visibly demonstrate high standards of safety performance. The right structure relates to requiring line management to accept accountability for safety, building a talented support staff, setting meaningful safety goals and creating a process for change management. Focused action includes robust two-way communications, constant safety training and meaningful auditing. Technology and facilities play major roles in the development of a safe environment. This presentation also will address risk-based behaviours and how to instil operational culture changes through a systems approach.

[TS06-08]
Health and Safety Management in Veolia Water Asia Pacific

Franck Benichou

Veolia Water, France

Veolia Water Asia Pacific has activities in municipal and industrial fields for water and wastewater services in the Asia Pacific region. As the installations, regulations and situations in the various sites where we operate can be very diverse, Veolia Water Asia Pacific has decided to promote sound and active Health and Safety management based on its internal policy and water activity know how. In order to reduce the hazards linked with our specific activity, and to provide a safe and healthy work environment, this health and safety management is based not only on documents but also on site assessments and intensive training.

Regional Meeting

Regional Meeting

Asia-Pacific I

[AP01] Challenges in Occupational Safety and Health in Asia - Experiences of ASEAN- OSHNET

July 1, 13:30 – 15:45
Room: 103, COEX

Co-Chairperson:
Thongdeng Singthilath, Minstry of Labour and Social Welfare, Lao People`s Democratic Republic
Ho Siong Hin, Ministry of Manpower, Singapore

[AP01-01]
ASEAN-OSHNET – Embracing Differences, Pooling Resources, Sharing Experiences

Johari Basri, Ibrahim Abdul-Rahman

ASEAN-OSHNET Secretariat, Malaysia

The active and effective promotion of regional cooperation as a means of improving the working conditions in ASEAN countries became one of the priorities in the Hanoi Plan of Action adopted at the 6th ASEAN Summit in Hanoi in 1998, which highlighted the need to establish and strengthen networks in education and training, particularly in those aspects promoting OSH, especially considering the relevance and importance of OSH to the protection of both human and material resources and thereby to sustainable socioeconomic development. As the predominant, united voice of South East Asia in OSH, ASEAN-OSHNET is essentially an integrated regional platform – linked to the broader ASEAN platform – for Member Countries to jointly face globalised OSH challenges and threats while facilitating the convergence of ideas, information and knowledge; and the pooling of experiences, expertise and resources; which will hopefully elevate OSH in the South East Asian region to a higher plane in the long term. ASEAN-OSHNET's main vision is to become an effective regional institution for fostering a safe and healthy working environment to bring about a productive and competitive workforce as one of the means to a better quality of life. The overall implementation of ASEAN-OSHNET's programmes, activities and projects is in general guided by its 4-year Plans of Action. To date, 6 priority OSH areas, called Programme Areas, have been identified, namely: (1) Research; (2) Standards; (3) Training; (4) Information; (5) Inspection; and (6) National OSH Frameworks. In order to streamline efforts in these 6 Programme Areas, 6 ASEAN-OSHNET Member Countries have been assigned with the main responsibility for coordinating each of the areas, namely Indonesia (Research), Malaysia (Standards), Philippines (Training), Singapore (Inspection), Thailand (Information) and Vietnam (National OSH Frameworks). These coordinator countries are called Programme Area Coordinators. In fulfilling their OSH duties and responsibilities, both the national OSH enforcement authorities and the national OSH training & education centres of ASEAN-OSHNET Member Countries are faced with several major challenges. In general, the most daunting of these is that related to funding. Other major challenges include: (1) the development and maintenance of sufficient and competent manpower; (2) the acquisition and maintenance of adequate and up-to-date equipment; (3) the establishment and upkeep of adequate physical facilities, i.e. premises, training facilities, R&D facilities etc.; and (4) the establishment and maintenance of adequate information management systems, especially ICT systems, including both hardware and software. Nevertheless, the funding component is generally paramount, mainly because the availability of funds also critically affects a Member Country's ability to cope with the other challenges. These challenges represent constraints which limit the ability of both the national OSH enforcement authority as well as the national OSH training & education centre to fulfil the tasks, duties and functions expected of them. For instance, some ASEAN-OSHNET Member Countries, despite their quite apparent zeal and commitment, are still heavily dependent on foreign and international assistance in implementing major national OSH programmes, projects and activities.

[AP01-02]
Developing and Effective Implementation of National Programme on OSH in Line with ILO Convention No 187

Doan Minh Hoa

Ministry of Labour, Invalids and Social Affairs, Vietnam

Basing on draft of ILO convention No 187 in 2003, and technical support of ILO specialists, The Vietnam OSH programme has been developed, and approved in 2006 by Government

The progamme has been formulated and reviewed because of analysis of the national situation regarding OSH, including analysis of the national PROFILE for OSH. Specific targets to 2010 are to reduce by 5% the

annual occupational accident frequency rate in particularly hazardous sectors (mining, construction, and use of electricity); to reduce by 10% the number of newly contracted cases of occupational disease; to train more than 80% of OSH officers and workers in jobs with strict OSH requirements...

The programme has seven Projects from 2006 - 2010 with state budget of VND 242 billion (USD 15 millions), embraces capacity building of OSH State administration and Disseminating, educating, training to enhance awareness of different levels, sectors, organizations and individuals. The programme has been implemented in collaboration with other national programme. The activities of the Projects are integrated into other related activities, to contribute to the protection of workers by eliminating or minimizing, so far as is reasonably practicable, work-related hazards and risks, to promote the development of a national preventative safety and health culture.

The programme has been publicized, to the extent possible, endorsed, and launched by Government. The Programme has been developed and implemented in consultation with the representative organizations of employees (Vietnam General Confederation of Labour General Confederation of Labour, Vietnam Farmers Association), representative organizations of employers (The Vietnam Chamber of Commerce and Industry and Vietnam Cooperatives Alliance a), and other social organizations (Vietnam Occupational Health Association, Vietnam Occupational Safety and Health Association). In the end of 2007, executing ministries has developed the yearly plan; 64 regions across Vietnam has the OSH target in local area to 2010, with some preliminary results.

[AP01-03]
Practical Application of OSHMS in Indonesia

Nasrul Sjarief

Ministry of Manpower and Transmigration, Indonesia

[AP01-04]
Helping Small Enterprises Improve OSH and Productivity

Chaiyuth Chavalitnitikul, Sudthida Krungkraiwong

Ministry of Labour, Thailand

In Thailand, most of the enterprises are SMEs and they play an important role to develop of the Thai country due to large quantities. In spite of their importance, many SMEs fail to grow and facing with OSH problems. Their working conditions need to be improved.

The Department of Labour Protection and Welfare, Ministry of Labour recognizes the problems so the National Institute for the Improvement of Working Conditions and Environment (NICE) started a project to develop OSH in SMEs in 2006 to help SMEs to improve safety and health it their work places.

The activities of the project are: selection of SMEs, organize meeting with SMEs, organize workshop in SMEs, future action plan for OSH improvement and follow-up visit. During the workshop, participants will conduct the WISE Checklist and discuss their future action plan for improvement. From the follow-up, we found that SMEs that join the Project can make various OSH improvements in their workplaces. Most of their OSH improvements were simple, practical and low cost. Some improvements could reduce number of occupational injuries or increase number of work quality or quantity. In 2007, there were 276 SMEs that joined the Project and among those SMEs, there were 222 SMEs or 80.43 percent that made OSH improvement in their workplaces. Our target in 2008, we will try to convince at least 250 SMEs to join the Project and 80 percent will make OSH improvement.

[AP01-05]
Promoting OSH for OFWs, Philippine Experience

Brenda Villafuerte

Department of Labor and Employment/Bureau of Working Conditions, Philippines

There are about 19.1 million Filipino workers of which 19.8 % or about 3.8 million are documented contract workers or commonly called as OFWs (Overseas Filipino Workers) either land based or sea based who are mostly deployed in Saudi, UAE, Hongkong, Kuwait, Qatar, Taiwan, Singapore, Italy, United Kingdom and Korea.

OFWs are being tagged as the country's new heroes for providing support to the Philippine economy through their remittances. Thus, the government has strengthened its policy, programs and services on contract migration in order to provide appropriate and relevant social and economic protection measures for the OFWs.

In keeping with the thrusts of the DOLE for the OFWs, a full cycle protection which include pre-deployment, deployment/onsite and post deployment/upon return is being provided to ensure fair, just and humane conditions of work thereby upholding the human dignity of OFWs

through sustained income, health and social security benefits and access to productive opportunities.

At present, the effort to achieve the goal of making the OFWs secure, safe, empowered and productive are collectively being done by the different DOLE agencies spearhead by POEA and OWWA. A single agency approach and cross-cluster activities and services within DOLE have been intensified as a key to generate great impact on the protection and welfare of OFWs.

The DOLE Roadmap for 2008-2010 with its over-all objective of "Attaining full, decent and productive employment for the Filipino Workforce" has included strategic actions and targets towards ensuring protection of OFWs before deployment, while on site and upon return.

[AP01-06]
Extending OSH Protection to Informal Economy Workplaces in Cambodia

Leng Tong[1], Tun Sophorn[2], Tsuyoshi Kawakami[3]

Ministry of Labour and Vocational Training[1],
ILO Informal Economy, Employment, and Poverty Reduction Project[2], Cambodia, ILO Subreigonal Office for East Asia[3], Thailand

Cambodia places a high priority on improving safety, health and working conditions of informal economy workplaces. Home workers, workers in small construction sites, and workers in rural farms are typical informal economy workers who receive little safety and health protection. The Ministry of Labour and Vocational Training of Cambodia, in cooperation with the ILO, has assisted these informal economy workers in improving working conditions and productivity by using participatory training methodologies. The following steps were taken for promoting training: (1) to build collaborative networks with government agencies, workers' and employers' organizations and NGOs; (2) to visit informal economy workplaces and collect good examples in safety and health; (3) to develop participatory training programmes for informal economy workplaces by adapting the ILO's WISE (Work Improvements in Small Enterprises) training programme, and (4) to train representatives of the government, workers, employers and NGOs as safety and health trainers for extending training coverage. Participatory training programmes developed consisted of 30-item action-checklists, good example illustrations and texts explaining practical, low-cost improvement measures. The trained safety and health trainers visited and trained many informal economy workers by using the developed participatory training programmes. The trainers, after conducting the initial training, made follow-up visits to the trained workers and assisted them in sustaining improvements. The Ministry carried out achievement workshops for the trainers and trained workers to exchange experiences. The trained Cambodia trainers reached many informal workers through their own networks. Participatory training methodologies focusing on good practice approaches and low-cost improvement measures were useful for supporting informal economy workers' improvement actions. These programmes will be incorporated into the OSH Master Plan of Cambodia and be increasingly applied as practical measures to improve safety, health and working conditions of informal economy workplaces.

[AP01-07]
ILO Cooperation with ASEAN-OSHNET

Tsuyoshi Kawakami

ILO Subregional Office for East Asia

ILO and ASEAN-OSHNET (ASEAN Occupational Safety and Health Network) have been taking collaborative actions in policy, training, research and information in occupational safety and health (OSH). These collaborative actions have supported OSH good practices at workplace level and promoted functioning national policy for wider impacts. ILO Promotional Framework for OSH Convention (No 187, 2006) has provided practical guidance for ASEAN countries in developing and implementing their strategic national OSH programmes. Tripartite and inter-ministerial cooperation was promoted in the course of national OSH programme developments. This effort has ensured looking at broad national OSH needs in legislation, enforcement, injury reporting systems, or industry-specific OSH support programmes. ILO and ASEAN-OSHNET have been jointly addressing emerging OSH issues. The recent joint actions include: developing the nation's first OSH Master Plan in Cambodia, training tripartite OSH trainers for small enterprises in Lao PDR, promoting public awareness of the future Pandemic Human Influenza as a workplace issue in Thailand, and strengthening training programmes in the national OSH training centre in Vietnam. Singapore in cooperation with ILO is collecting national OSH good practices in ASEAN countries for dissemination. The ILO will continue to work together with ASEAN-OSHNET for supporting its effort in providing adequate OSH protection for all workers.

Asia-Pacific II
[AP02] Occupational Safety and Health Systems for Asia-Pacific Region

July 1, 13:30 – 15:45
Room: 336, COEX

Chairperson:
Tom Fisher,
Australian Safety and Compensation Council, Australia

[AP02-01]
Recent Developments in OHS in Australia

Tom Fisher

Australian Safety and Compensation Council, Australia

Brief description
The presentation provides an overview of the current status of OHS in Australia and recent achievements including the National OHS Strategy and outlines recent changes and some of the challenges faced by Australia.

Objectives
The ASCC leads and coordinates Australia's national effort to:

- promote best practice in occupational health and safety (OHS)
- improve workers' compensation arrangements
- improve rehabilitation and return to work of injured workers

Its role is set in the context of Australia's regulatory environment which involves a federation, with six states and two internal territories and a federal government. The presentation will briefly outline Australia's legal framework and its underlying principles.

A significant achievement for the ASCC has been the development and implementation of the National OHS Strategy 2002-2012. The presentation will outline the key priorities for the Strategy and the achievements to date against those priorities.

While significant progress has been made in OHS in Australia, improvements can still be made in the area of consistency across jurisdictions and good regulation. The Australian government has a strong commitment to bringing national consistency to all regulation that impact on business. To this end work is under way to introduce reforms to the legislative framework.

There are, however, some challenges faced by Australia that will be briefly discussed in the presentation.

Expected outcome
The presentation "Recent Development in Occupational Health and Safety Strategies in Australia" will provide international delegates with an understanding of Australia's OHS current policies and programs and future directions set in the context of its current OHS performance and regulatory framework. It is aimed to provide a strong foundation for a productive discussion at the meeting.

[AP02-02]
The Eleventh Five-year Plan of Work Safety in China

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This paper introduces the Eleventh Five-year Plan of Work Safety in China, including the back ground, objectives, major tasks, the measures to realize the objectives, and the key projects. Compared with the year 2005, the general objectives are the accident resulted death per 100 million GDP decrease 35%, industrial accidents caused death per 100,000 workers decrease 25%, major accidents that is more than 10 deaths in one accident decrease 20%, the occupational hazards serious situations is under effective control. To achieve those objectives, legislative, economical, and technical measures are introduced also. And the key matching projects such as coal mine accidents prevention, major potential hazards correction,

Key words: work safety, China, five-year plan

[AP02-03]
An Overview of Occupational Safety and Health Management by Government in Factories, Ports and Docks of India

S.K. Saxena

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In the context of Globalisation, growth is destined to gallop at an enviable rate by the end of the current decade resulting in the OSH issues becoming highly significant in

factories, ports and docks of India. The Government of India through its nodal department Directorate General Factory Advice and Labour Institute (DGFASLI) looks into the administration of OSH in the factories, ports and docks. The Indian industry is becoming a force to reckon with in the present context and has registered factories spread over thirty two States and Seven Union territories. There is a variation in the density and type of Industries across the country. Globalization has lead to growth in diversity and complexity of technologies in the Factories. The country is served by sea routes on all the three peripheral sides and has developed twelve major ports for ships to call and discharge the cargo of all types at these ports. DGFASLI manages OSH in Factories by administration of The Factories Act 1948, enforcing The Dock Safety, Health and Welfare Act, 1986 and the regulations 1990 in ports and docks and by imparting training to all stake holders. DGFASLI also carries out academic, technical activities apart from conducting field studies on OSH matters. This paper deliberates on ensuring occupational safety and health by Government in Factories, Ports and Docks of India with the strategies towards achieving Vision 2020 apart from detailing on achievements in OSH.

KEY WORDS
Occupational Safety and Health, Government, Factories, Ports and Docks

[AP02-04]
Standards Developers' Drive for International Harmonization

Robert Williams

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The presentation will address the process of standards harmonization, that is, when the technical requirements of various standards are made equivalent or identical. Although the actual words comprising the harmonized standards may be different, the performance or safety requirements embedded in the standards have been addressed equally. In the global economy, standards harmonization means that manufacturers can be assured that any product tested to a harmonized standard will meet the requirements of multiple markets relying on it. International standards harmonization is becoming more common in the United States, although it is virtually impossible to publish a US standard that is identical to an International Electrotechnical Commission (IEC) standard. Deviations are usually necessary. Mr. Williams' presentation will describe some of the processes in place for US standards developers to harmonize with international standards, the levels of harmonization that may be possible, and the challenges inherent in the process of arriving at a harmonized "global standard."

[AP02-05]
CLEAN Workplace Program for Financial Assistance for Small-sized Enterprises in Korea

Yong Kuk Kim

KOSHA, Korea

It is estimated that an annual average of 80,000 workers are involved in occupational accidents in Korea. Roughly 40% of the accidents occur in manufacturing industries, and 70% of these accidents are occurred in small-sized workplaces with less than 50 employees. It is because those small-sized workplaces are so financially weak that can't invest in safety facilities and improve the poor working conditions where the so-called 3Ds (Danger, Dirtiness, and Difficulty) are prevalent.

To solve these problems, KOSHA introduced a "CLEAN Workplace Program" in October, 2001, which helps workplaces eliminate all the hazardous and dangerous factors by offering financial assistance.

Through online application procedures, KOSHA quantifies risk scores for the facilities based on submitted information by applicants and provides selected workplaces with financial and technical assistance to improve their poor working environment. From 2002 to 2006, the program successfully contributed to a distinct decrease in the number of occupational accidents and of fatalities, an average of 27.2% and of 38.7% respectively.

【Industrial Accident Reduction in CLEAN Workplaces】

Category	2002	2003	2004	2005	2006	Average
Rate of Disaster	↓ 19.1%	↓ 18.2%	↓ 48.3%	↓ 23.6%	↓ 26.7%	↓ 27.2%
Ratio of Death per 10,000 Persons	↓ 36.3%	↓ 21.6%	↓ 57.6%	↓ 39.1%	↓ 38.7%	↓ 38.7%

* "↓" means decrease

The "CLEAN Workplace Program," mainly targeting small-sized manufacturing companies with less than 50 workers, was planned to reduce the occupational accident rate from 1.98% in 2001 to less than 1 % by 2013. According to the program, KOSHA will supports financially 10,000 accident-prone workplaces classified as hazard and dangerous industries this year.

And KOSHA is planning to increase the number of beneficiaries by 6% every year, and the program will be continued so as to create safer and more comfortable working environment until 40% of all workplaces and 70% of hazardous workplaces in Korea will be certified as "CLEAN Workplaces."

[AP02-06]
The Changing World of Work and Occupational Health and Safety in New Zealand

Mark Wagstaffe

National Occupational Health and Safety Advisory Committee, New Zealand

In summary, growing recognition of the risks posed by altered work arrangements has only partly found its way into the activities of OHS regulators and related agencies (like those responsible for research/standard setting and workers' compensation). New models of Occupational Health and Safety regulation may be required to address the pressures that the multiple changes in the work are imposing on Occupational Health and Safety.

[AP02-07]
Financial Assistance for Small and Medium Enterprises

Thomas Teo

Ministry of Manpower, Singapore

Small and Medium Enterprises (SMEs) often lack the resources of bigger companies to implement elaborate Workplace Safety and Health (WSH) management systems, thus requiring accessible and practical steps towards improving their Workplace Safety and Health practices and systems.

In Singapore, the government has committed a total of S$13 million towards helping SMEs build capability in Risk Management. Termed Risk Management Assistance Fund (RMAF), the programme allows SMEs to receive funding for the engagement of WSH professional consultants and WSH training. A WSH programme that focuses on a recognition framework, bizSAFE was also introduced to motivate enterprises towards building capability and implementing Risk Management and Safety and Health Management. By banking on promotional and engagement efforts instead of regulatory and enforcement actions, the programme fosters a bizSAFE Community, which is akin to a business ecosystem where enterprises, large companies, suppliers, service provider influence and depend on one another to develop better safety and health outcomes. The programme has five different levels of WSH management capability to achieve, each bringing a step closer in journey to deliver excellence in WSH Management System.

Through the two programmes, funding and recognition go hand-in-hand to motivate and assist SMEs towards capability building in RM and WSHMS. All these efforts are necessary in the implementation of Singapore's WSH Framework, firstly, in shifting industry mindset from following the letter of the law to taking responsibility of standards and outcomes and secondly, they emphasize the importance of good WSH management systems.

[AP02-08]
Lessons from Asbestos-related Cancers in Japan

Naomi Hisanaga[1], Eiji Shibata[2], Kiyoshi Sakai[3], Michihiro Kamijima[4], Hitoshi Kubota[5], Ippei Mori[5],

Aichi University of Education[1], Aichi Medical University School of Medicine[2], Nagoya City Public Health Research Institute[3]. Nagoya University Graduate School of Medicine[4], National Institute of Occupational Safety and Health[5], Japan

We have been investigating adverse health effects of asbestos exposure among construction workers since the mid 1980s. We are now encountering rapidly increasing asbestos-related cancers in our research cohort. We are afraid of that the current situation is merely an initial stage of asbestos-related cancers' explosion in construction industry. This report aims to share the lessons from asbestos issues in Japan with other countries. The report focuses on four topics shown below.

1. Asbestos load in environment and human lungs: Our international cooperative study showed that asbestos concentrations in urban and rural air and lung tissues of deceased people not due to asbestos-related diseases were higher in Japan than in Korea, respectively. The findings suggest the differences of environmental asbestos load between the two countries.
2. Workers compensated as asbestos-related cancers in Japan: From 2005 to 2006, the compensated mesothelioma and lung cancer amounted to 2078 and 1287, respectively. Of them, 872 and 515 were occupied by construction industry.
3. Asbestos exposure in construction industry: According to our survey, high asbestos exposure concentration, 100 fibers/ml and over, was often observed during cutting an

asbestos board by an electric circular saw from the mid 1980s to early 1990s. Measures suppressing dust exposure were insufficient then. Those heavy exposures will result in mass-outbreak of cancers in near future.

4. Ongoing asbestos exposure in demolition and rebuilding sites: Although the asbestos use was prohibited except specified limited ones in 2006, asbestos exposure in demolition and rebuilding sites still remains. Workers in those sites are exposed to various hazards together with asbestos. Avoiding reproduction of asbestos-related diseases and other illnesses is an urgent task.

We suppose that similar situations would be common in the world. International exchange of lessons and good practices gained can facilitate resolution of the issues.

Symposia

Symposia

[SY17] ILO and WHO Action towards the Elimination of Asbestos-Related Diseases

July 1, 16:00~18:30
Room: 104/105, COEX

Co-Chairperson:
Igor Fedotov, ILO
Ivan Dimov Ivanov, World Health Organization

[SY17-01]
ILO Policy on Asbestos

Igor Fedotov

ILO, Switzerland

Asbestos is increasingly seen as the major challenge for occupational and public health policies worldwide. All types of asbestos are classified as agents carcinogenic to humans (Group 1) by the International Agency on Research for Cancer (IARC) of the WHO. It is the most important occupational carcinogen which, according to an ILO estimate, causes 100,000 deaths every year. No threshold has been identified for chrysotile asbestos below which carcinogenic risks cease to exist, there is a dose-response relationship between hazardous asbestos exposures and appearance of asbestos-related diseases (asbestosis, lung cancer and mesothelioma), and where safe substitute materials for chrysotile asbestos are available they should be used.

The ILO policy on asbestos is aimed at eliminating asbestos-related diseases through the establishment of comprehensive national action programmes to eliminate them. This policy is based on the relevant ILO international instruments, namely the Occupational Cancer Convention No.139, Asbestos Convention No.162, Chemicals Convention No. 170, and the ILO Resolution on Asbestos adopted by the International Labour Conference in 2006. The ILO policy is convergent with the WHO strategy on the elimination of asbestos-related diseases and the two organizations are actively collaborating to address the challenges of asbestos.

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[SY17-02]
WHO Recommendations on Elimination of Asbestos-Related Diseases

Ivan Dimov Ivanov

World Health Organization (WHO), Switzerland

The assessment of health risks of the different types of asbestos and their substitutes carried out by WHO and the International Agency for Research on Cancer demonstrated that: (1) all types of asbestos cause asbestosis, mesothelioma and lung cancer; (2) there is no safe threshold level of exposure; (3) safe substitutes exist; (4) exposure to workers and other users of asbestos-containing products is extremely different to control; and (5) asbestos abatement is very costly and difficult to carry out in a completely safe way. WHO estimates that currently about 125 million people in the world are exposed to asbestos at the workplace. This results in at least annual 90,000 fatalities from lung cancer, mesothelioma and asbestosis due to occupational exposures. In addition, several thousands of deaths can be attributed to other asbestos-related diseases and to non-occupational exposures. These figures are projected to increase in the future due to the long latency period of asbestos-related malignant diseases. Currently, countries differ substantially in regulating the various forms of asbestos. Bearing this in mind, WHO in collaboration with ILO is supporting countries that still use large amounts of chrysotile asbestos to develop national programmes for elimination of asbestos-related diseases. Such programmes include a complex of regulatory, workplace and medical intervention to eliminate asbestos-related diseases and for primary prevention of exposure to chrysotile asbestos.

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[SY17-03]
The National Strategic Plan and Action for Prevention and Control of Asbestos Related Diseases in Thailand

Somkiat Siriruttanapruk

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Thailand is currently the world 4th largest importer of asbestos. This will be one of the most important public health problems in the country in the near future. The aim of the study was to describe the asbestos situation and

national strategic plan and action for further prevention and control of the problem.

Asbestos has been imported to Thailand for more than 40 years for use by several industries. In 2006, the amount of imported asbestos was approximately 140,000 Tons. There were at least 16 asbestos–using factories with 1,800 exposed workers in the country. The main industries were roof-tile and cement manufacturing. In spite of high levels of airborne asbestos exposure in workplaces, asbestos-related diseases have never been reported to the national surveillance schemes or the Workmen's Compensation Fund. This may be due to lack of awareness for diagnosis of the diseases among physicians, and ineffective workers' follow-up system. However, without any implementation of preventive and control measures, an estimation of patients with asbestos-induced mesothelioma would be approximately 1,100 cases annually in the near future. Therefore, it is very important for policy makers and relevant agencies to set up the policy and strategy to prevent and control of the diseases urgently. With the support of international agencies, such as ILO and WHO and in line with their recommendations, Thailand has already set up and developed the national strategic plan and action for control and ban of asbestos and elimination of asbestos related diseases (NPEAD). The Plan consists of 4 main areas including: 1) Workers and public protection, 2) Prevention, control, and ban of asbestos use in industries, 3) Collaboration among relevant organizations at all levels, 4) Improvement of disease diagnosis and surveillance. The duration for conducting the Plan will be within 5 years.

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[SY17-04]
Action Program for the Elimination of Asbestos - Related Diseases in Vietnam

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Asbestos hazards that affect human health have been scientifically recognized for more than 50 years. Many countries in the world make efforts to eliminate and control its harmful effects, but asbestos remains a big concern not only to workers, but also to consumers of asbestos containing products and the public. In Vietnam, asbestos has been used since 1960s, on average between 60 to 70.000 tones of asbestos per year. 90% of asbestos is used in production of construction materials.

In order to control asbestos hazards and eliminate its affects on workers' health, Vietnam has developed a National Action Program for Elimination of Asbestos-related Diseases (NPEAD) in line with the ILO and WHO recommendations. **Objectives of NPEAD:**

1. To reduce substantially the use of asbestos and to control the number of exposed people.
2. To raise awareness among workers, employers, and civil society on the health risks and other negative consequences of the use of asbestos.
3. To develop step-by-step measures for substitution of asbestos with safer materials. **Activities**

1. To develop the national profile on the use of asbestos and asbestos-related diseases. 2. To increase capacity building of occupational health services and labor inspectors.
3. To carry out studies on asbestos-related diseases and their prevention.
4. To develop substitution technologies for asbestos and other technical solutions to replace asbestos-containing products.
5. To raise awareness among workers, employers, civil and business society about the health risks of the use asbestos.
6. To develop national regulations on prevention of asbestos-related diseases. 7. To prepare health-based criteria for the elimination of the use of asbestos
8. To improve the registration, reporting system, health surveillance for asbestos-related diseases.

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[SY17-05]
Global Mortality of Asbestos Diseases - Implications for Asian Countries

Ken Takahashi

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We recently demonstrated a clear ecological relation between mortality rates of four asbestos disease categories and historical asbestos use of 1960-1969. Per capita asbestos use served as a surrogate for the general exposure level of a population for estimation of health effects. We follow-up by analyzing the national experiences of recent mesothelioma mortality, historical trends in asbestos use (considering ban status) and their inter-relationships. Highest mortality rates were recorded in the countries of Northern Europe and Oceania whereas increasing trends were common in Eastern and Southern Europe, Asia and South America. Countries showing

increasing trends in mortality substantially outnumbered those showing decreasing trends. Although increasing trends may be due to increased disease recognition, our analyses showed increasing trends more often among countries with above-median mortality rates. Asbestos use peaks were higher and earlier in Northern and Western Europe, Oceania and the Americas (excluding South America). Countries not adopting bans had a low peak but currently maintain a relatively high level of asbestos use. Regression analyses showed that recent variations in mesothelioma mortality are proportional to historical changes in asbestos use: change in asbestos use from 1970-1985 was a significant predictor of recent change in mortality for pleural mesothelioma. Thus national interventions to substantially reduce asbestos use, including bans, successfully reduce the burden of disease. Asian countries lack basic statistics for asbestos diseases, but implications can be derived by closely observing trend in asbestos use therein.

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[SY17-06]
Epidemiology of Asbestos-related Diseases and Policy Developments Leading to the Ban of Asbestos in Korea

Do Myung Paek

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The asbestos industry in Korea has undergone a series of changes over the period. The change in asbestos consumption, first a steady rise to reach a plateau and then a sudden fall, is not a random process. This paper tried to give a systematic review on unfolding process of asbestos problems by examining key events and role players over the periods and ensuing changes in the trend of asbestos consumptions in both Korea and Japan.

Three phases of asbestos consumptions, the initial phase of industrial expansion, and then the middle phase of plateau after the implementation of administrative regulations, and finally the last phase of shrinkage following the start of repercussions of previous asbestos exposures, were identified. The repercussions of asbestos industry were identified in the area of mining, manufacturing, end-users, and by-standers in Korea.
Finally, source, exposure, effect and action (SEEA) model of unfolding process of asbestos problems is suggested to elucidate somewhat belated lessons for developing countries that are undergoing similar changes to Korea.

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[SY17-07]
Substitutes for Asbestos Products

Barry Castleman

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Bans on asbestos have been followed by the complete substitution of asbestos products that used to be used, in countries around the world. I have gathered and provided information to the World Bank and to the World Health Organization on the products available to replace asbestos-cement construction materials and other asbestos products. The product research includes information on providers of alternative products and substitute synthetic and natural fibers. This paper includes that material. The substitute construction products consist of fiber-cements made with polymeric and plant fibers, as well as wholly different product compositions that serve the same functions as asbestos-cement sheets, pipes, and water storage tanks. Increased costs for producing fiber-cement sheets from polymeric fibers (polypropylene or polyvinyl alcohol) combined with cellulose are 10-15%. Some of the substitute products can be made with locally available materials and labor, using simple, portable equipment in remote locations. Appropriate adjustment of import duties can favor asbestos substitution. Long term operating costs for properly maintaining and renovating structures made with asbestos, not to mention the constant health threat to workers and building occupants, should favor constructing the next generation of infrastructure with an increasing array of safer substitute materials.

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[SY17-08]
Development of National Programme for Elimination of Asbestos-Related Diseases in the Russian Federation

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Russia is the world's largest asbestos producer and consumer. In Russia only chrysotile is produced and used

for civil purposes. Over 50 percent of chrysotile production is used for inner consumption (predominantly for asbestos cement production). Amphiboles (anthophylite and crocidolite asbestos) were produced from 1947 until 1994 in small amounts (about 40 000 tons for all period of production) for special purposes at two deposits in Sverdlovsk region.

Basic positions of the current Russian legislative documents are: (i) – the use of amphiboles is banned; (ii) - work with chrysotile asbestos-containing materials should be performed under control and accompanied by safety measures (dust emission prevention); (iii) - free of charge obligatory special medical examinations should be carried out before, during, and after (if necessary) occupational contacts with asbestos dust; (iv) - asbestos-related diseases are included in the official list of occupational diseases and compensated if occupational contact with chrysotile containing dust is proved.

Global campaign for elimination of asbestos-related diseases – bearing in mind a differentiated approach to regulating its various forms – in line with relevant international legal instruments and the latest evidence for effective interventions, is properly stipulated by the Global Plan of Action on Workers Health for 2008–2017 that had been adopted by 60th session of World Health Organization Assembly (May 23, 2007).

In 2007, the Ministry of Health and Social Development of the Russian Federation issued an order to develop a project of National Program for Elimination of Asbestos-Related Diseases for the period of 2008 - 2017. First of all, planning and realization of research work series on evaluation of occupational and non-occupational asbestos exposure risks in different conditions and studying of active safety legislation should be provided. Priority directions of actions would be selected on the base of received information, regarding Russian and international experiences.

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[SY17-09]
The BWI Campaign on Asbestos and the International Institutions

Fiona Murie

Building and Woodworkers International, Switzerland

The Building and Woodworkers International is committed to promote the elimination of the use of all kinds of asbestos and asbestos containing materials, and the elimination of diseases caused by exposure to asbestos. In 2000, the BWI began a global campaign, which has gradually developed and gathered momentum, due to the activities of our affiliated trade unions in their respective countries. There are four action areas in our campaign:

1. The need to stop using asbestos world-wide as soon as possible
2. Alternatives to asbestos and re-conversion of the asbestos cement industry
3. Prevention of exposure to installed asbestos
4. Supporting those affected by asbestos diseases

Examples will be given of the trade union contribution to national strategies and workplace prevention initiatives.

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[SY18] How to Improve the Capacity and Interest of SEs for Occupational Safety and Health: Good Practice Examples of Some Efficient Tool

July 1, 16:00~18:30
Room: 310, COEX

Chairperson: **Norbert Weis**, ISSA Section on Machine and System Safety

[SY18-01]
Implementation of OHS Management by Using TQM Strategy: A Case Study of Algerian SMEs

Djeghdjegh Abdelkader[1], Boughaba Assia[2], Djebabra Mebarek[2]

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Total quality management has been one of the leading management strategies for enhacing productivity of companies in recent decades the principles of this management have been used in managing health and safety in Algerian oil industry TQM focuses on products, services and customers expectation entreprises that fellow TQM principles should manage their OHS in a

comprehensive and Effective manner and incorporate the requirements of systemic OHS management Into its single organization management structure.

Algeria has regulations requiring all employers to implement a specified OHS management system. The core of any OHS management system comprises items that are crucial for pursuing a proper OHS policy and facilitate control over hazards that arise in the company's operation an OHS management system forms a part a part of an overall company management system which is also made up of the organizational structure, planning, responsibilities, codes of conduct, procedures, processes and resources needed to formulate, implement, follow, revise and maintain an OHS policy.

The aim of this paper is: firstly to investigate the implementation of OHS management within the Algerian Small and Medium sized companies through using the TQM strategy elements Secondly establish an effective link between OHS management and TQM strategy as a total system to guide the operation of industrial organizations.
Keywords: *OHS management –TQM – Algerian SMEs – Work environment.*

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[SY18-02]
Risk Assessment in Small and Medium Enterprises- General Principles

Harald Gruber[1], Tankred Meixner[2], Christian Schenk[3]

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Many owners of SME´s have already discovered that good health and safety standards in the workplace enable employees and themselves to achieve better working results. Having a healthy workplace is an integral part of a successful enterprise´s quality. With regards to this, risk assessment is particularly important.

Many national laws relating to health and safety at work require a risk assessment, but even without a legal requirement to perform an assessment, it is good practice to do so as it allows effective measures to be taken to protect workers´ health.

Without the support of specialists in health and safety often the owners of SME´s are unable to carry out risk assessments; the direct result of which is that they are also unable to put into place measures to eliminate and reduce risks. For this reason risk assessment tools, interpreted and written in plain language for owners, are necessary.

The same risk assessment tools should be used in many different countries with the aim of achieving the same high standards in health and safety at work in every country.

A coordinated procedure for risk assessment in many countries was one of the aims of the international symposium in Prague, The Czech Republic, in autumn 2007.
As a result of the symposium, risk assessment tools have been developed.

At the conference in Korea in 2008, the results of the work from this international symposium, combined with previous experiences in supporting owners of SME´s at an international level, will be introduced. Such work will also encourage partners from many other countries to cooperate in this field.

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[SY18-03]
Risk Assessment in SMEs

Peter Ruedin

National Accident Insurance Fund (SUVA), Switzerland
Since the year 2000, Swiss enterprises must be in compliance with the new guideline on occupational health and safety. In order to prevent occupational accidents and diseases, each enterprise must know its hazards and risks, take the appropriate measures and document them. If an enterprise with special hazards does not have the specialized knowledge to handle these tasks, it must consult an external occupational physician or another occupational safety specialist. Different trade associations and trade unions in cooperation with Suva have made so-called industrial safety - branch solutions for medium and large sized enterprises. These branch solutions differ from sector to sector and contain a rough analysis and evaluation of the occupational health and safety risks targeted at a specific sector. However for smaller enterprises, the expenditure for a branch solution is too large, first of all on the mandatory documentation. Therefore, Suva has produced a CD for small and medium sized enterprises (SMEs). Based on checklists, a SME can perform the necessary steps from risk analysis to the implementation of the suggested measures and document

them by filling in the forms. The presentation shows the tool "identification of hazards and design of measures by means of checklists". All these checklists and further documentation of occupational health and safety that are published from Suva are also available on the Internet (www.suva.ch/waswo), as a rule in German, French and Italian.

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[SY18-04]
Health and Safety Management Based on Risk Assessment and Audit System Process in Veolia Water Korea

Dae Hee Yun[1], Steven(jaeho) Lee[1], Merzak Belkhodja[2]

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Veolia Water Korea has activities in municipal and industrial fields for water, wastewater treatment and services in 10 sites in South Korea. There are specific health and safety hazards in water industries, and employees and/or third parties could be faced to these hazards on our sites. In order to reduce these hazards linked with our activity, and to provide a safe and healthy work environment, Veolia Water Korea has made continuous efforts to develop health and safety management through risk assessment and systematic audit.

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[SY18-05]
The Review of an On-line Small Business Centre and Safety Calculator to Assist Small Business in Accessing and Effectively Applying OHS Information into Their Operational Strategies.

Michael Abromeit

Industrial Accident Prevention Association, Canada

Small businesses represent the majority of enterprises within the province of Ontario Canada. Ninety percent (250,000 firms) of these organizations employ fewer than fifty employees per firm which represents a third of the provincial workforce. Small businesses continue to experience challenges towards integrating occupational health and safety (OHS) into their operating strategies due to resource challenges, and effective and efficient access to support information and services. The IAPA has succesfully worked together with small business partners to develop and launch an online small business centre in 2005 to provide easier access to OHS information. The small business centre represents a self service "Health & Safety Road Map" that guides small business owners through four simple but powerful steps to meet not only their legal obligations but also further develop their injury / illness prevention system. Steps include: An Understanding of Legal Obligations; Recognizing, Assessing and Contolling Hazards; Information and Training Solutions; and Measurement and Evaluation Strategies. In addition, in March 2007 the website introduced the launch of a small business safety calculator, re-adapted and re-engineered from the original "WorkSafe BC" program. The calculator allows for the user to input "real life" business loss scenarios that will help identify injury / illness costs, both direct and indirect. As a not for profit organization, IAPA provides these two online programs free of charge to assist small businesses within Ontario to develop and integrate their prevention strategies in an easy to use accessible format.

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[SY18-06]
The Power of an Employer Segmentation Model in OHS Improvement Programs

Creagh Moore

WorkCover New South Wales, Australia

It has long been held that two essential ingredients for successful workplace safety are commitment; usually demonstrated by way of policy and procedures; and capacity; often achieved through workplace training and resourcing.

This session will outline recent work undertaken in WorkCover NSW that considered how commitment and capacity can inform an employer segmentation model.

The model proposes four distinct categories of employers and examines how the characteristics associated with these categories can instruct the design and implementation of OHS improvement programs, and in particular programs associated with advice and assistance initiatives.

The paper explores the relationship between the employer categories, an information, advice, education and

assistance continuum, and how an employer's willingness to change and the "stages of change" should be taken into account when designing OHS improvement programs.

In closing the session will breifly outline the benefits to be gained by adopting this approach.

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[SY19] National OSH Profiles in Arab Countries: A Link to National OSH Systems

July 1, 16:00~18:30
Room: 403, COEX

Chairperson: **Ahmed Luqman**, Arab Labor Organization
Moderator: **Michele Nahmias**, ILO

[SY19-01]
Challenges and OSH Limitations in Arab Region: The Role of ALO

Siba Hatem

Arab Labor Organization OSH Arab Institute, Syrian Arab Republic

There are many global challenges faced by Arab countries such as globalization and competition, inequity, poverty, unemployment, conflicts..etc, as well as many OSH limitations hindering OSH services/activities at national level in the Arab countries, the main of which are lack of either enabling legislation, standards, expertise and coordination between concerned authorities, along with insufficient financial, technical and human resources.
Arab Labor Organization which is concerned about workers issues in the Arab region believes that healthy workforce is vital for sustainable development at all levels, and it should be the target of OSH policies. So it has made every effort to promote health and safety at work and support OSH activities in the Region. Capacity-building and strengthening of national policies, strategies and plans of action on OSH are important aspects of ALO support to the Arab countries, by which they can overcome shortcomings.
ALO stresses the value of cooperation with ILO in an effort to improve national OSH situation in Arab countries.
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[SY19-02]
Overview of the Occupational Safety and Health Situation In the Arab Region

Manal Azzi

ILO, Switzerland

Occupational accidents and diseases are major causes of injury and deaths among workers. Work-related deaths in the Middle East were estimated at 19,000 in 20051[1]. To prevent the exposure of workers to such hazards, the ILO has been working on spreading worldwide awareness on the matter, pointing out to the existing dangers and deficiencies at the working environment, proposing means to overcome them, and offering all kinds of assistance to enforce changes on the ground.

In a joint effort to promote safer working conditions in the Arab region, the ILO and the Arab Labour Organization (ALO) will hold a workshop in November 2007. This study offers a background on the OSH situation of 18 Arab countries including: Algeria, Bahrain, Egypt, Iraq, Jordan, Kingdom of Saudi Arabia, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen.
A questionnaire was sent to the Ministries of Labour in all studied countries to obtain information on the existing national safety and health conditions.The results of the current study on OSH situation in the Arab region showed that Arab countries vary in their health and safety condition, with some countries showing serious deficiencies in OSH mechanisms and performance.

Arab countries should start with the ratification of the ILO OSH conventions and set the proper OSH legislative framework necessary for OSH promotion in the region. Tripartite committees should take part in taking the necessary decisions for the promotion of OSH. Research and educational institutes should be encouraged to undertake OSH studies, and proficient OSH specialists and inspectors should be recruited and provided with the necessary facilities to enforce OSH regulations. Raising public and workers' awareness on OSH should be achieved to promote a safety and health culture in the society.

1[1] The IOMC is collaborative agreement to coordinate international activities in the area of chemicals management. Participants comprise UNEP, ILO, FAO, WHO, UNIDO, UNITAR and OECD.

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[SY20] Efforts for International Control Banding Toolkits

July 1, 16:00~18:30
Room: 336, COEX

Chairperson: **David M. Zalk**, International Occupational Hygiene Association/World Health Organization
Moderator: **Pavan Baichoo**, ILO

[SY20-01]
Global Risk Management (Control Banding) Activities: A Path Forward

Marilyn Fingerhut

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Efforts are underway on all continents to provide simple guidance for employers to reduce workplace risks. These qualitative risk management toolkits mostly target small businesses and address the following risks: **chemicals**, including specialized toolkits for specific chemicals, silica, and allergens causing bakers' asthma; **ergonomics**, including agricultural ergonomics; **safety**; **psychosocial issues,** and **sector specific toolkits**, including Construction, Health Care Workers and Health Care Wastes.

Illustrations are organized by continent. In Asia, India's Chennai University is conducting training programs for employers to manage chemicals; the National Institute of Occupational Health and NGOs are preparing guidance for silica flour milling, stone crushing, and agate grinding. The Ministry of Manpower in Singapore is using a chemical control toolkit with small and medium enterprises. The Korean Occupational Safety and Health Agency (KOSHA) is developing web-based guidance to control chemicals used widely by SMEs.. In China, the National Institute for Occupational Safety and Health and Poison Control (NIOSHPC) translated the UK COSHH Essentials into Chinese, and the Fudan University in Shanghai is working with volunteer factories. A toolkit for healthcare workers has been piloted in Vietnam.

Europe is the leader in qualitative risk management approaches, including the UK Health and Safety Executive COSHH Essentials, the Stoffenmanager of The Netherlands; and Germany's GTZ Chemical Management Guide. EU partners are now developing a Pyschosocial Risk Management Toolkit. IOHA and organizations in The Netherlands are developing Barrier Banding for injury prevention. In the Americas, regional control of silica is central to the ILO/WHO Global Program to Eliminate Silicosis. In South Africa, projects include control of silica in quarries and baker's flour in shops. Control of ergonomic risks is central for ILO, IEA, IOHA and ICOH.

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[SY20-02]
IOHA Efforts for Control Banding Globally

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The International Occupational Hygiene Association (IOHA) is a community of occupational hygiene organisations from around the world. At present, there are twenty six member organisations. It aims to improve, promote and develop occupational hygiene worldwide via the member organisations such that a safe and healthy working environment can be provided in all workplaces.

In the past years, IOHA participated actively in international and national activities, and was collaborating with many other organisations including ILO and WHO for protection of health to all. International Scientific Conferences in occupational hygiene was held every three years. This provides a platform for discussion and experience sharing in practicing of occupational hygiene and managing of health risk in workplaces. In the promotion of occupational risk management, IOHA strongly supports the concept of building up an occupational safety and health management system in order to tackle the rapid changing work conditions, work processes and organisations. IOHA had made contribution to the drafting of the publication "Guidelines on occupational safety and health management systems" that was published by ILO in 2001.

In conjunction, IOHA advocates the technical concept of control banding for preventing occupational diseases and protecting workers' health. It is a practical means especially suitable for small and medium sized enterprises, which do not have sufficient resources or expertise to develop comprehensive methods for prevention and control of occupational hazards. There have been a

number of initiatives proposed in the 5-year work plans of the WHO collaborating centres in occupational health, and the concept of control banding is being tried and reviewed periodically. IOHA provides the opportunity for information exchange and experience sharing on many case examples by co-organizing international workshops from time to time. Moreover, the principle of control banding can be applied not only in the control of chemicals but also other workplace hazards.

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[SY20-03]
Developing Ergonomic Checkpoints for Facilitating Practical Improvements in Small-Scale Workplaces

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The process of developing ergonomic checkpoints for their use in facilitating workplace improvements in small-scale workplaces is discussed. Recent examples of ergonomic checkpoints include the IEA/ILO Ergonomic Checkpoints as well as checkpoints compiled for participatory training of small enterprises, home workers and farmers and for ISO/TS 20646. These checkpoints are similarly designed and suited for direct use in participatory training steps. The combined use of the checkpoints and corresponding checklists helps trainers guide managers, workers and farmers how to plan and implement workplace improvements. The design process of these checkpoints matches the training needs of corresponding training programs, and consists of collecting good practices, selecting practicable improvements and presenting their low-cost options with concrete how-to information and illustrated examples. Thus they cover a broad range of technical areas including materials handling, workstations, work environment, welfare facilities and work organization. Particularly in small-workplaces including small industrial enterprises, construction sites, home workplaces and agricultural farm households, participatory steps applying ergonomic checkpoints and corresponding checklists actually lead to reduction of work-related safety and health risks. Case studies have confirmed reduction in occupational injuries, musculoskeletal complaints and exposures to hazardous agents. For ensuring the facilitation of workplace improvements effective for reducing work-related risks, the following three common features of these checkpoints seem important: (a) correspond to local good practices in multiple areas; (b) focus on low-cost options locally available; and (c) present basic principles of ergonomics and occupational hygiene. These features help users identify and implement feasible options with real impacts. It is recommended to develop locally adjusted ergonomic checkpoints for their use in facilitating risk-reducing improvements feasible in various work settings.

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[SY20-04]
Barrier Banding and the Construction Toolbox

David Zalk, **Ton Spee**

International Occupational Hygiene Association, United States

Control Banding (CB) strategies offer simplified solutions for controlling worker exposures to constituents often encountered in the workplace. The expansion of CB models, or toolkits, within the greater occupational health and safety professions affords an opportunity to seek prevention of work-related illnesses and injuries affecting the world's 2.8 billion workers. Similar to the banding of chemicals by toxicity, classifications already exist for various variables of accident causation. Banding safety risks for selection of appropriate barriers for injury prevention is similar to selecting appropriate engineering controls based on chemical hazard bands in CB. Barriers to injury, including management factors, are strongly related to the quality of safety management systems, and are important parameters for risk prevention. Presented for your consideration, this Barrier Banding model would apply safety phrases to accident scenarios or related situations and guide the user to the type of precautions needed to work toward an injury prevention toolkit.

Multidisciplinary CB models for work-related risk reduction in construction need to address the variety of hazards (chemical, ergonomic, safety, and environmental) faced by the industry's workers. Thus, the incorporation of individual toolkits into a Construction Toolbox is an appropriate next step. The International Control Banding Workshops have facilitated toolkit approaches for ergonomics, silica, and safety in a manner that includes the provision of national-level guidance and coordination of pilot projects at the state level. This Occupational Risk Management Toolbox approach concept has become a by-product of this coordination, broadening the CB model to include a more comprehensive exposure control basis for universal

industries such as construction and agriculture. Working to further develop this multidisciplinary effort is an international, informal working group that includes the U.S., U.K., and The Netherlands. They are seeking occupational health and safety professional input toward the development of a task-specific Construction Toolbox framework.

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[SY20-05]
Application of Chemical Risk Management (Control-Banding) Toolkits in Southern India: Lessons Learnt and the Way Forward

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The project presents results of application of chemical risk management (control banding) toolkits in industrial units located in the Southern India. 7 small-scale units (leather / textile processing) and 25 large-scale industries (petrochemicals/ automotives) were involved in this pilot application. The approach involved sensitization of owners to a range of available toolkits (COSHH Essentials, The GTZ guide and the ILO Toolbox), allowing owners to select an approach (based on their perception of utility of a specific toolkit), application/evaluation of toolkits by investigators alongside plant managers and development of supplemental information databases and/or toolkits based on feedback. Wherever feasible, investigators performed independent industrial hygiene measurements to aid in the understanding of the risk management framework required in these settings.

Nearly 30 processes (13 in textiles and leather and around 20 processes in large- scale industries) were evaluated using the toolkits. Data from more than 100 industrial hygiene measurements performed as part of on-going research projects were compiled for comparative assessments. Inventorization of chemicals, access to MSDS/internet resources, demonstration of economic benefits in the near term (for the GTZ guide), lack of detailed information on design of controls and lack of accompanying local regulation presented the most significant challenges in the application of these toolkits. Additional improvements made to enhance local application included translation of the GTZ guide in the local languages (Tamil and Hindi), illustration of local processes with specific pictures and development of process flow charts to identify opportunities for exposure reduction/ material savings in these sectors. In addition, stand alone PC based toolkits are being developed that provide access to "risk" information for some 300 chemicals used widely by local industries and provide process specific control guidance. While initial successes are promising, considerable challenges remain in creating a sustainable local framework for sound chemical management.

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[SY20-06]
Korean Control Toolkit for Industrial Chemicals

Byung Gyu Kim

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Recently occupational diseases, like acute or chronic intoxication caused by chemicals have broken out in Korea. Most cases have occurred in small and medium sized enterprises (SMEs). Based on KOSH Act, hazard information on chemicals dealt in workplaces should be provided to workers. In Korea, Safety data sheets including warning signs were provided for users, but there is no specific information adjusted to each workplace. KOSHA has set up Korean control toolkit for chemical substances by modifying HSE's control banding and ILO toolkit and to improve hazard communication system especially in SMEs. Based on data from industrial accident compensation insurance, 30 chemicals that have repetitively caused occupational diseases were selected. In 2006 and 2007, the nation-wide survey for 12 chemicals was carried out to investigate actual conditions regarding use of them, and to build up country-specific toolkit. In 2008, the survey has been conducted for Benzene, Acrylonitrile, Chromium, Manganese, Cadmium, Dye stuffs. Professionals in KOSHA conducted the survey with a checklist that included information on amount of chemicals used, equipment and method of use, the type and level of exposure, time duration and the cycle of exposure, etc.. KOSHA also developed the specific controls like local exhausted ventilation system and effective tools for worker's health protection. Korean control toolkit has been developed as an web-based program that makes workers access to hazard information on chemicals. KCT could provide the hazard assessment and specific controls or operations for highly hazardous process. The information from KCT is useful to provide specific and practical guidance on how to prevent occupational diseases by chemicals and a user-oriented tool for hazard assessment with low cost.

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[SY20-07]

The UNITAR/ILO Global GHS Capacity Building Programme GHS Implementation Supporting Workplace Safety, Worldwide

Craig Boljkovac, Jonathan Krueger, Cheryl Chang

UNITAR, Switzerland

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is an internationally-agreed tool for chemical hazard communication, incorporating harmonized chemical hazard classification criteria and provisions for standardised labels and safety data sheets. The GHS is an important tool that countries can draw upon to develop national chemical hazard communication systems by providing a basis for the establishment of comprehensive chemical safety programs.

In response to growing requests from countries for capacity building to support GHS implementation, in 2001 the "UNITAR/ILO Global GHS Capacity Building Programme" was initiated. The Programme is a joint collaboration of UNITAR and the ILO, working through Inter-Organization Programme for the Sound Management of Chemicals (IOMC)2[1], as well as other interested partners.

The main objectives of the UNITAR/ILO Programme are to:

- raise awareness of decision-makers and other relevant parties in developing countries and countries with economies in transition;
- catalyze regional GHS capacity assessments and implementation strategies;
- catalyze multi-sectoral and multi-stakeholder processes at the national level towards developing and implementing national GHS implementation strategies;
- develop a set of peer reviewed capacity building guidance and training materials

Benefits of the GHS in the workplace include:

- improved safety through consistent and simplified communications on chemical hazards and practices to follow for safe handling and use;
- greater awareness of hazards, resulting in safer use of chemicals in the workplace;
- improved communication with employees;
- increased efficiency and reduced costs in compliance with hazard communication regulations;
- maximization of expert resources with minimum labour and costs;
- fewer accidents and illnesses; and
- improved corporate image and credibility

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2[1] *HIV/AIDS and work: global estimates, impact on children and youth, and response,* ILO, 2006

[SY21] Occupational Health in the 21st Century

July 1, 16:00~18:30
Room: 101/102, COEX

Co-Chairperson: **Seong-Kyu Kang**, KOSHA
Jorma Rantanen, International Commission on Occupational Health

[SY21-01]

Global Workforce in the 21st Century: Trends and Challenges

Jorma Rantanen

International Commission on Occupational Health, Finland

While the averaged trends are positive, the wide gaps between the workers of poorest and richest countries and between skilled and unskilled workers constitute a major challenge to the occupational safety and health policies.

The Trends:

- Declining unemployment, growing productivity per employee, and declining work poverty
- Enhanced level of education and skill and declining trend of illiteracy
- Improving health status and life expectancy
- Growing migration
- Increasing self-employment and informal employment
- Changes in occupational structures, growth of services occupations

The challenges:

Constricting the gaps in health and safety by more effective prevention of hazards and protection of workers including provision of better occupational health and safety services:

1. More attention to the protection of female workers, migrant workers, ageing workers and young workers

2. Provision of occupational health and safety services for workers in the highly fragmented enterprise structures
3. Ensuring occupational safety and health for workers in small-scale enterprises, self-employed, informal workers and mobile workers
4. Finding innovative strategies for special care of the underserved groups and protecting high-risk groups
5. Preparing for new risks and challenges such as global pandemics.

The global occupational health community has most of the knowledge and technical skill available, but the resources are far from being sufficient for putting that knowledge into practice for all work places. Intensive and extensive global, international and national policy actions are needed to make it a reality in the next decade.

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[SY21-02]
Impact on Compensation of Cardio-Cerebral Diseases for Workers Health

Seong-Kyu Kang

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Introduction

The Industrial Injuries Compensation Insurance Fund (IICIF) in Korea has compensated 1,493 cases of cardio-cerebro vascular disease (CVD) including 515 fatalities in 2007. The number of compensated CVDs was relatively high compared to other countries. This phenomenon was caused by the diagnostic criteria of work-related CVD, which was established by social pressure.

History of compensation

CVD was not on the list when IICIF was established in 1963. Most cases of claimed CVD were not accepted as work-related. Many workers and relatives went to the court in early 1990s. The court accepted many CVD cases as work-related if the workers proved that they suffered from long working hours or job stress. Consequently, the regulation of the criteria of work-related diseases expanded in 1994 and work-related CVDs have rapidly increased by generous application procedure in conjunction with increased workload after the economic crisis.

Preventive activities

Many preventive activities were performed. Health promotion was included in the responsibility of the government in ISHAct since 1996. Employers' responsibility for prevention of physical fatigue and mental stress was established since 2002. According to the regulation, many actions were taken into practice in workplaces with high risk CVD workers. Education and information were provided. KOSHA developed an evaluation program for assessing the risk of CVD. KOSHA has provided occupational nurses to conduct special consultations to workers at risk..

Conclusion

Compensated CVDs have decreased since 2003 due to various preventive activities conducted by the government, employers, and professional agencies because they were accepted as work-related. The beginning of compensation for CVD started by political reason rather than scientific decision. As a consequence, compensation brings better working environment at workplaces. Therefore, it will be strategically useful to compensate CVD as work-related disease to decrease its occurrence and to improve workers' health in 21 century.

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[SY21-03]
Impact of International Migration on Workers' Health

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Out of the 175 million migrants worldwide, 120 million are migrant workers and their families. International labour migration has a number of impacts upon individuals, work settings and national policies. Migrant workers are vulnerable to suffer a number of occupational health problems: accidents, pesticide-related illness, musculoskeletal and soft tissue problems, dermatitis, non-infectious respiratory diseases, reproductive health problems, climate-related illnesses, communicable diseases, urinary tract infections as well as eye and ear problems. In addition, general health problems exacerbate the risk of work-related diseases among migrant workers. Women workers are doubly marginalized, being vulnerable to physical and sexual violence, psychological abuse, under nourishment and extreme exhaustion. The children of migrant workers suffer homelessness, lack of friends, frequent relocation and schooling interruption, resulting in psycho-social and development risks, poor immunization records and stunted growth.

Currently, WHO approaches the specific health needs of migrant workers from two main angles - the human rights and the public health strategies. The human rights strategy to migrant workers' health entails several issues, as outlined in the WHO publication "International Migration, Health and Human Rights". The public health strategy to addressing the health of migrant workers is outlined in the WHO global plan of action on workers' health endorsed by the 60th World Health Assembly in May 2007. Migrant workers are identified as one of the key target populations for WHO activities regarding the protection and promotion of health at the workplaces.

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[SY21-04]
Future of Occupational Diseases Caused by Manganese

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Manganese (Mn) is an essential element that can become toxic when exceeding the homeostatic range in the organism. Mn overload can be caused by occupational and environmental exposure. Excretion occurs mainly through the biliaric pathway, therefore liver disease causing biliaric obstruction can also determine Mn overload. Exposure to airborne Mn concentration higher than 1 mg/m^3 in total dust can cause manganism, which is an intoxication featuring extrapyramidal signs of rigidity and bradikinesia, and psychiatric hallucination with marked aggressivity. An increased frequency of parkinsonian disturbances has been also observed in epidemiological studies on Mn exposed welders.

Prolonged exposure to lower levels causes impairment of neurobehavioral functions including coordination of fine movements and cognitive changes. These early signs of neurotoxicity are related to cumulative exposure, as expressed by cumulative exposure indices obtained by integrating the exposure duration and the average exposure levels in the different time periods. Therefore, adverse effects of Mn exposure are related to a long-term mechanism of action, and they may become evident in the older age. This is why the contribution of Mn exposure in the etiology of neurodegenerative diseases may be difficult to recognize.

Based on these considerations, preventive action should be undertaken in order to minimize the risk of late-onset Mn-related neurodegeneration. Risk assessment procedures should be based on exposure metrics suitable to cover or estimate long term and cumulative exposure. Unfortunately, accurate biomarkers of exposure and toxicity are still lacking, and more research should focus on this aspect. Longitudinal follow up and prospective studies should also be envisaged for a better understanding of dose-effect and dose-response relationship and the evolution in the long term. In fact, Mn could act as an environmental agent able to interact with the physiological ageing and cause an acceleration of the neurodegenerative process in the brain.

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[SY21-05]
How to Promote Employee's Cancer Screening Behaviors?: Educational Challenges Based on Health Belief Model

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The purpose of this study was to identify the significant perceptional factors associated with male workers' cancer screening behaviors in Korea. Survey participants were 197 safety and health (S&H) supervisors or team managers who took the safety and health training provided in the Korean Occupational Safety and Health Education Center (KOSHEC). The self-administered survey was distributed to the participants during the break time of their classes in KOSHEC. The questionnaire included personal characteristics, cancer screening experiences, education experience for cancer prevention at work, close people's advice for cancer screening, believes on cancer or screening (sensitivity, severity, perceived benefits, and perceived barriers), and intention to cancer screening based on the Health Belief Model (HBM). All participants were men and the participants who were 40 or older than 40 were 41.5%. Their company industries were classified to manufacturing 43.0%, construction 24.8%, and other services 32.2%.

Age (40 or older), income (3 million Won or more), and duration of work (longer) were significant factors related to taking cancer screening among personal characteristics. Past health education experiences and positive intention to future cancer screening were clearly associated with the past cancer screening behaviors ($p < .05$), but close people's advice for cancer screening did not show any significant relation with the past cancer screening. Only perceived benefits of cancer screening has a significant relationship with the past cancer screening behaviors

among the four belief variables in t-test. HBM variables applied in this study described 51.0% variance of cancer screening behaviors. Significant discriminant variables of cancer screening behaviors were high intention to future cancer screening, high income, health education for cancer prevention at work, and 40 or older ages. Perceived benefits of cancer screening was a significant factor to classify cancer screening behaviors but the size of importance was relatively low.

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[SY21-06]
A Successful Experience Improving Work Conditions and Safety Behavior in High-Risk Colombian Companies

Gloria Villalobos

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Objective: The purpose of the project was to design and prove an effective strategy in order to increase safety behavior, reduce accidents and improve working conditions, through an active participation of workers and employers.

Method: The methodology used was based in the "Participating Action Research". The research began with the identification of safety culture characteristics and the analysis of accidents occurred during the previous three years.
A more comprehensive methodology for presenting working procedures was designed as a part of the strategy. Besides, 70% of the employees were trained in behavior observation and modification by using feedback with other coworkers. A training process strength was the methodology for developing three skills: tasks observation, hazard recognition, and effective feedback.

The information obtained through observation was used by workers and supervisors in order to improve the working conditions and change the root causes of unsafe behavior.

Results: The strategy has been implemented and validated during three years with 2420 employees. An important number of supervisors and workers have been involved as part of the behavior management process; the main unsafe conditions have been changed; accidents have been reduced and, safe behavior has shown an important increase during intervention time. (See the following table).

Company	% Accident rate reduction	% Accident severity reduction	% Increase of safe behavior
Oil company	100%	100%	53%
Paper factory	46%	61%	19%
Food factory	66%	81%	100%
Gold mining company	39%	17%	33%

Conclusions. The results show the effectiveness of the strategy within high-risk companies for changing the workers??behavior as well as for increasing their ability to improve safety conditions.

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[SY21-07]
Risk Assessment and Occupational Health Surveillance Programme in Petroleum and Petrochemicals Industries in Thailand

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Background: Presently, chemicals are widely used and produced in various occupations. In Thailand, the Department of Customs has reported that more than million tons of oil, gas, and organic solvents are yearly consumed. Some of these chemicals are human carcinogens, especially for leukemia and lung cancer. Because of the increment of the petroleum and petrochemicals industries under the Eastern Seaboard Development Plan since the year 1982, the exposed workers (risk group) in these industrial groups were studied to find out the suitable health hazards prevention.
Methodology: During the year 2006-2007, this study was performed in petroleum and petrochemicals factories in Rayong province on documentary data of occupational health management, workers' health examination, legislation and authority of related organizations, and analysis of government action plan.
Results: It was found that there were no system of risk assessment and yearly health examination classified by the types of actual risk, especially for risk assessment to carcinogens. The characterization of chemicals exposure was not recorded in the health examination report. The other findings were there were no effectiveness of the

legislations for chemical hazards control and the yearly health examination records for occupational health management in workplaces. Therefore, the increasing number of the unknown causes of cancer in workplaces was occurred.

Conclusion and Suggestion: The risk assessment for planning of the yearly health examination and records of the exposure characterization identified by occupations and types of work should be used to set the policy making of the occupational health surveillance programme for occupational health management in the Petroleum and Petrochemicals Industries.

Keywords: Risk Assessment, Health Impact Assessment, Policy Making, Occupational Health Surveillance Programme, Petroleum and Petrochemicals Industries

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[SY22] Adapting Work to Demographic Change

July 1, 16:00~18:30
Room: 208, COEX

Chairperson and Moderator:
Christa Sedlatschek, Federal Institute for Occupational Safety and Health (BAuA), Austria

[SY22-01]
Active Ageing Policies in Europe

Karl Kuhn

Federal Institute for Occupational Safety and Health (BAuA), Germany

Demographic change is one of the most important challenges in all Member States of the EU. There will be a decrease of about 6.8% (20.8 million) of people in work age in 2030. Thus two workers (aged 15 to 65) will have to support one retired person (over 65 years) in 2030. The employment rate for older workers is increasing only slowly, with most Member States far behind the target of 50% -set for all EU Member States - and the average exit age remains low at 60.9 years in 2005.
Over the next 20 years the age structure of the working population will change and the general population of working age will decline. Referring to working conditions there are many challenges:

- to maintain and promote the health and working capacity of workers as they age;
- to develop the skills and employability of older workers;
- to provide suitable working conditions as well as employment opportunities for an ageing workforce.

Country reports from all EU member states show a lot of new active ageing practices including lifelong learning, preventive health care to working environments, incentives for retiring later and more gradually and even being active after retirement, tackling age discrimination, increasing standard retirement age and engaging in capacity enhancing activities, creating working conditions conducive to job creation better adopted to the needs of older workers and facilitating intergenerational relations, combing flexibility and security. Convincing people of the need to stay longer at work includes changing culture, attitudes and stereotypes. The culture of learning needs to be improved and training systems have to be modernised. The amount of good practice examples makes clear that mutual learning about what works is crucial and should be enhanced.
The contribution will give an overview about policies in the EU member states.

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[SY22-02]
Possible Impacts of Early Reduction of Individuals' Functional Capacity on the Brazilian Labor Force

Maria Tereza Pasinato, Ana Camarano

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The paper presents the results of an exploratory analysis about possible impacts of early reduction of individuals' functional capacity on the Brazilian labor force, specifically on early retirement. This task has been difficult due to the lack of information. An exercise was done using data from administrative registers on benefits concessions from the Social Security Ministry (Regime Geral de Previdência Social -RGPS) and from the Health Supplement of the National Household Survey (PNAD) for the years of 1998 and 2003. According to the World Health Organization (WHO), aging workers are those with 45 years of age or plus. It is assumed that over this age, functional capacities tend to reduce in the absence of prevention measures and adequate work conditions and result in early retirement of the labor force.

The results do not point to a trend of increase on early retirement due to occupational morbidity. They suggest changes in its profile. Nevertheless, it is expected that transformations in the labor market associated to demographic ones, such as population aging and increase in women participation in economic activities, in absence of medical and technological advances that allow a better adaptation for the worker to the new demands of the productive process, may result in early retirement.

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[SY22-03]
Safety Coaches - A Win-Win Project for Younger and Older Workers

Marc De Greef

Prevent, Belgium

Young workers starting a new job need to be trained and professionally coached. Young workers are faced with a higher risk of accidents due to their lack of experience and overconfidence. They can be coached by older colleagues, who can teach them not only the skills they need for the work but also the safe performance of the job. The older colleagues are the safety coaches in the company. They receive training on the introduction and the coaching of young workers and they receive the necessary information and tools to start the job well prepared.

The initiative is a win-win situation: the older employee or Safety Coach finds a new challenge in its job based on its experience and knowledge. The youngster is supported at its first steps on the shop floor and can take a safe start in professional life. The Safety Coaches project is partially financed by the Fund for professional experience in Belgium. The Fund supports companies to adapt the working conditions or to perform studies in order to improve the working conditions of older workers (aged 45 and older).

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[SY22-04]
To be Confirmed

Gerhard Albracht
International Association of Labour Inspection, France

[SY23] Tackling HIV/AIDS through Workplace Actions

July 1, 16:00~18:30
Room: 311A, COEX

Chairperson: **Syed Asif Altaf Chowdhury**, International Transport Workers Federation
Moderator: **Sophia Kisting**, ILO

[SY23-01]
Workers and Employers Together against HIV/AIDS in the Workplace: Experiences and Lessons Learned

Frederick Muia

International Organisation of Employers, Switzerland

The HIV/AIDS pandemic continues to have unprecedented impact on families, societies and businesses particularly in the most affected countries in Africa. As no one sector can win this war alone, experience has shown that total social mobilization where the key sectors of the society work together can wage an effective and sustainable response to the pandemic. The workplace is a key actor in all these efforts as enterprises, their company infrastructure such as clinics, their employees, families and surrounding communities can be effectively mobilized to deliver essential HIV/AIDS prevention education, provide care and support, treatment and above all create a favourable non discriminatory environment to sustain HIV/AIDS efforts. Employers' organizations have a key role to play not only in mobilizing their constituency but also in supporting national efforts. These efforts however could be made much more effective if private sector efforts are better coordinated within a national framework bringing together the key players of the business community and trade unions. The key players also need to build their capacity so that they can reach out to supply chains and other small and medium sized enterprises who may not have the requisite capacity. This intervention will present key lessons and experiences from joint worker and employer initiatives in Africa that are part of the IOE/ICFTU joint efforts against HIV/AIDS.

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[SY23-02]
Experience of the Fight Against HIV/AIDS in Firms

Roland Serge Ndong

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Fighting against AIDS in a company has various aspects depending on the strategies, the motivation and the mood of the firm. This presentation shows the way Veolia supports the Gabonese company of water and energy in this respect-After an introduction of the company the presentation outlines the rationale for the fight due to the dramatic situation of the country and also to the negative impact in the economy and turnover of the company that require an involvement of the employer and employees-Then the various steps of the project are evoked as well as the shortcomings around this struggle-It is highlighted that it is a combined venture a partnership between the managerial team and the staff that led to the designing of the project and the training workshops focusing on the struggle-There is also a stress on the difficulties around the project- However prevention and cure are debated over in the firm

People are encouraged to be tested on a voluntary basis and there is a promotion of the use of condoms in order to find against STD-Apart from prevention the aftermath is also taken into account in terms of follow-up with orphans and widowers-Actually shortcomings still exist but there is something currently going on as a matter of fact to raise awareness among the workers and the employers-

Key words: S.E.E.G., VEOLIA,AIDS, firm, magico-religious

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[SY23-03]
Grass-Root HIV/AIDS Preventive Actions in Vulnerable Sectors: Focus in Garments Sector of Bangladesh

Farida Khanom

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There is 1.8 million workers in garments sector of Bangladesh. 80% of them are female workers (age group 15-30) with poor wage and unhealthy working conditions. Majority of the female are from poor rural background and socially unprotected.

In the RMG Sector, majority of garments workers lives in the slum. While living in slums, they meet with various types of peoples i.e. transport workers; rickshaw puller, drug users, some time sex workers etc. as neighbor. The ordinary garments workers mainly the female become more vulnerable of HIV infection, than any other time in the past.

Core problems for RMG workers on HIV/AIDS are unsafe sex behavior; lack of workplace policy to deal the HIV/AIDS issue; lack of workplace education and awareness for workers; absence of workers friendly educational and sensitization tools; lacks of opportunity for female workers to participate in HIV/AIDS discussions (as special problem); lack of workplace consultation between workers organization and employers on HIV/AIDS.

Since July 2006, with the support of Bangladesh Occupational Safety, Health and Environment Foundation (OSHE) six (6) industrial trade union federations in readymade garments sector of Bangladesh (4 of them are ITGLWF affiliate) working together on implementation of a "HIV/AIDS Awareness Programme for workers in garments sector'.

Key Lessons Learned:

Workplace education programme for workers contributing towards raising of personal awareness and preventive knowledge among workers on HIV, observation shows that knowledge and behavior is changing among garments workers on safe sex and other reproductive health issue, the programme is contributing as new special means for the trade union to strengthen it organizing drive through HIV/AIDS Education programme at unorganized workplaces, it is helping to develop trade union capacity to engage effective consultation with employer and government on Workers health and HIV/AIDS threat related issues under the public health domain.

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[SY23-04]
The National Programme to Fight AIDS and Sexually Transmitted Diseases in Workplace: The Experience in Iraq

Hillal Jassim
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[SY23-05]
The ILO Programme on HIV/AIDS and World of Work

Sophia Kisting
ILO Global Programme on HIV/AIDS, Switzerland

[SY23-06]
Addressing HIV/AIDS through Occupational Health Services

Benjamin Alli

ILO, Switzerland

The ILO Global Estimates indicates that out of the 33.2 million people in the world living with HIV, 90% are working-age adults3[1]. The provision of care and support to the workforce should therefore constitute an integral part of a broad public health and social protection approach to combat HIV/AIDS. This is necessary because of the impact of HIV/AIDS on health and socio-economic fabric of affected populations.

Evidence from countries facing mature AIDS epidemics reveals that increasingly high AIDS patient admission levels have a significant impact on the capacity to treat other patients. In view of this situation, other options such as the intervention of occupational health services, for which there is an existing ILO standard, should be explored. Many larger workplaces have in place some form of medical service for employees that administer therapies and provide support and monitoring needed to ensure effective treatment. Consequently, the world of work can play a key role as a facilitator in providing essential care and support activities such as information on healthy living; psycho-social support for persons living with HIV/AIDS; and access or provision of social protection.

The ILO *Code of Practice on HIV/AIDS and the world of work* promotes the need to address the prevention and management of HIV/AIDS within an occupational safety and health context by defining principles related to prohibition of discrimination in recruitment and employment; and the need for: building the capacity of health/safety officers to deal with HIV/AIDS, reasonable accommodation, the provision of tests and treatment after occupational exposure, occupational and other health services, social benefits and employee and family assistance programmes.

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[SY23-07]
Workers' Education on HIV/AIDS at the Workplace

Ahmed Khalef

ILO Actrav, Algeria

It is important to emphasize the reality of AIDS in the workplace which is a bitter one. More and more workers are facing this reality, and the likelihood that the number of workers suffering from HIV/AIDS is growing tremendously.
Because of the presence of HIV-positive workers at the workplace, employers should take all necessary steps to inform and sensitize the workers. Such information process cannot be achieved without the active participation of the workers themselves and trade unions support.. All partners must collaborate with a view to develop strategies which will help reduce the risk of the virus transmission.
Despite repeated efforts to inform the widest public, a sense of fear continues to prevail and has resulted in the rejection of HIV-positive persons. It is unacceptable in the workplace that ignorance, rumour and prejudice lead to discriminatory behaviours and attitudes. This is contrary to ILO standards and human rights.
ACTRAV promote ILO resolutions, and carry out programmes to support workers' unions, such programmes include training, education, information and prevention. The aim is to avoid anachronistic reactions such as panic, fear and discrimination against HIV-positive workers.
We are facing two challenges, the prevention of the risks of infection by educating young and old people, also, the social integration of victims often rejected by society.
The equation "AIDS = sex" is totally wrong and is detrimental to information about the disease. We must dispel the myths and misinformation about the transmission of HIV/AIDS which can be avoided, even if it could be ultimately a fatal disease.

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3[1] Building and Wood Workers International (BWI) is a Global Union Federation representing about 350 trade unions in the building, construction, wood and forestry sector from 135 countries and with a membership base of around 12 million.

[SY23-08]
Integration of HIV and AIDS Prevention and Control in the Workplace Program into Occupational Safety and Health Scheme as National Policy in Indonesia

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HIV and AIDS in Indonesia has become an epidemic. At the end of 2003, it was estimated that 90,000 – 130,000 people living with AIDS (PLWA), 75% men and 25% women. 85.6% of PLWA are in productive ages: 20 – 50 years, and 88.6% are workforces: 15 - 55 Years. Considering the great impacts to workers' productivity and economic development, the Ministry of Manpower and Transmigration (MOMT) has been actively involved in National AIDS Commission since its commencement in 1994. Task and function of the MOMT in the National Strategy 2003 – 2010 are:

- Develop policy and regulation on prevention and control of HIV and AIDS in the workplace;
- Working environment control program
- Policy improvement on mobile population and conflict areas
- Increase awareness in the workplace.

Activities have been done:

1. translated ILO Code of Practice: HIV/AIDS in the World of Work;
2. Tripartite Declaration on commitment, follow up by developing Human Resources;
3. issued MOMT Decree No. 68 of 2004 on HIV/AIDS Prevention and Control in the Workplace and
4. conducting intervention program funded by Global Fund.

The MOMT Decree No. 68 of 2004 stipulates that Implementation of HIV/AIDS Prevention and Control should be integrated into OSH program. During two years intervention program (2005 – 2007), Training of trainers covered 477 labour inspectors, 279 company physicians and 182 OSH Committee members. Total companies have conducted HIV/AIDS prevention program are 334 (111.3%) of the target;

Surveillance conducted after two years intervention showed significant change of risky behaviour among male workers. Three of five provinces target areas have developed their policy on workplace prevention. We conclude that HIV/AIDS approach through OSH is more efficient and effective. We recommend that ILO should develop international standard on integration of HIV and AIDS in the workplace into OSH program.

[SY24] Strategies and Programmes of Safety and Health for the Future in the Americas

July 1, 16:00~18:30
Room: 330, COEX

Chairperson: **Martha Guevara**, National Safety Council, United States
Moderator: **Luz Maritza Tennassee**, Pan-American Health Organization

[SY24-01]
Promoting and Protecting the Health of Healthcare Workers: Initiatives and Next Steps

Luz Maritza Tennassee[1], Marie-Claude Lavoie[1], Susan Wilburn[2], Manish Pahwa[1]

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The health sector employs more than 60 million workers worldwide. The health, safety and employment conditions of healthcare workers (HCWs) are challenged by chronic personnel shortages, an increase of the global burden of disease, occupational hazards, and a lack of comprehensive information systems and occupational services. One risk frequently encountered by HCWs is exposure to blood-borne pathogens. The World Health Organization (WHO) estimates that the percentage of infections attributable to occupational risk for Hepatitis B (HBV), Hepatitis C (HCV) and HIV among HCWs are 40%, 40% and 4%, respectively.

To mitigate the occupational health and safety (OHS) of HCWs and workers in other labor sectors, the WHO Global Plan of Action on Workers' Health was endorsed by the World Health Assembly in May 2007. The multi-sectoral and multi-disciplinary plan calls for the devise of national policy instruments on workers' health, including specific OHS programs for HCWs such as immunizing HCWs against HBV. The Global Plan takes into consideration global factors influencing the working conditions, the health of HCWs as well as varied occupational risks present in the healthcare sector.

The Global Plan of Action on Workers' Health builds upon preceding work in the region of the Americas. Several countries are now implementing the *Protecting healthcare workers-preventing needlestick injuries* project, a collaborative effort lead by WHO/the Pan American Health Organization (PAHO) and the National Institute of Occupational Safety and Health. Parallel to these initiatives, WHO/PAHO and its collaborators are developing technical resources to strengthen OHS at the country level, including training materials for the prevention and control occupational hazards.

Looking ahead, priorities include safeguarding OHS achievements while addressing challenges to the health of HCWs. Strengthening occupational health information systems, coordinating multi-sectoral efforts, ensuring accessibility to OHS services and disseminating and adapting guidelines at the local level remain key priorities.
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[SY24-02]
Innovative Partnership Model for Preventing Occupational Bloodborne Pathogens Infections among Health Care Workers

Maria Lioce-Mata

National Institute for Occupational Safety and Health, United States

In Latin America the attributable fraction of infections among health care workers due to sharps injuries reaches about 80% for Hepatitis B, 53% for Hepatitis C, and 2.5% for Human Immunodeficiency Virus. In 2005, the World Health Organization (WHO), the Pan American Health Organization (PAHO) and U.S. National Institute for Occupational Safety and Health (NIOSH and Latin-American partners developed a model project for the Region. Venezuela agreed to conduct the pilot project. The WHO toolkit "Protecting Healthcare Workers: Preventing Needlestick Injuries" was culturally and linguistically adapted to Latin American audiences.

In 2007, international, national and state partners participated in national and train-the-trainer workshops. The partners agreed to have Aragua State as a model for the country. The key partners in Venezuela who have been working in the implementation of the needlestick project are: 1) *Institute of Public Health Advanced Studies Dr. Arnoldo Gabaldon (IAES)* the highest scientific institute of the Ministry of Health; 2) *CORPOSALUD* the autonomous health institute attached to the Governor of State; 3) *PDVSA*, Petróleos de Venezuela, S.A. the Venezuelan state-owned petroleum company; and 4) *IVSS* the Venezuelan Institute of Social Security.

The model aims at transferring expertise through a research institution. This conceptual approach involves strengthening research and surveillance capabilities within a research institution, which in turn trains and supports government officials and other professionals to implement preventive interventions, and ensures sustainability of the intervention. In one year, this project has been successfully expanded to four neighboring states and continues its expansion. About twenty five hospitals and three Networks of Outpatient Care have started to implement this project. Also, 750 students from national universities and health care professional institutions were trained with the toolkit.
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[SY24-03]
Healthy Hospitals Project: International Collaboration to Protect Healthcare Workers From Infectious Disease Transmission

Marie- Claude Lavoie[1], Maritza Tennassee[1], Annalee Yassi[2], Elizabeth Bryce[1], Ronaldo Fuji[2], Milton Logronio[3]

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Transmission of nosocomial infections is a major global public health concern affecting healthcare workers and patients. The World Health Organization estimates that over 1.4 million people worldwide are suffering from infections acquired in hospital. The Healthy Hospital Project, an international collaboration between the Pan American Health Organization (PAHO), Ecuadorian Ministry of Public Health, University of British Columbia and Provincial Infection Control Network of British Columbia, aims to strengthen Ecuador's capacity to promote healthier and safer hospitals by reducing occupational transmission of infectious diseases. The main activities of the project include: 1) identifying primary disease hazards and health risks; 2) strengthening existing occupational health and safety (OHS) committees; 3) conducting OHS workshops for healthcare workers and managers; and 4) promoting the development of micro projects to address priority hazards. The needs assessment revealed several good occupational

health and infection control practices such as the establishment of a medical waste disposal program and widespread dissemination of health information. Challenges included a high frequency of recapping needles, limited resources and training available to enable workers to apply consistent infection control measures. A survey of health-care workers' knowledge of occupational health and infection control demonstrated a high percentage of under-reporting of exposure to blood and bodily fluid, and limited OHS training. These findings guided the design and content of a training program. Results of the pre- and post-workshop participant questionnaire show an increase in knowledge of needlestick injury prevention, and on the procedures and relevance of reporting occupational injury. Following the workshop, existing OHS committees implemented micro projects and participated in delivering training sessions to over 200 healthcare workers on needlestick injury prevention and precautionary principles. The knowledge and experience gained throughout the project will serve as a basis for the implementation of other OHS projects across the country.

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[SY24-04]
Global and Regional Overview of Silicosis Elimination Efforts

Marilyn Fingerhut

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Silicosis, one of the oldest occupational diseases, kills many thousands of people every year, everywhere in the world. It is an incurable lung disease caused by inhalation of dust containing free crystalline silica. Crystalline silica dust is released during numerous operations in which rocks, stones, raw materials, sand, concrete, cement roofing tiles, bricks, pottery, some ores and soils, and silica-containing products are crushed, broken, hammered, drilled, polished, cut, dumped, swept, or blown. Silicosis usually occurs as a diffuse nodular lung fibrosis. Other diseases associated with respirable silica include silico-tuberculosis, lung cancer, airway diseases, autoimmune disorders, and chronic renal disease.

The ILO/WHO Global Program to Eliminate Silicosis (GPES) was established in 1995, following the recommendation of the Joint ILO/WHO Committee on Occupational Health. This Program targets countries that set as a priority the elimination of silicosis and commit to establishing a National Program to Eliminate Silicosis. Countries including Brazil, Chile, China, India, Thailand, Vietnam and South Africa have established National Programs. In 2005, the Pan American Health Organization, the WHO, the ILO, the Chilean Institute of Public Health and the Ministry of Health, Chile hosted a regional conference for North and South American countries to plan the first regional effort to eliminate silicosis. This effort has developed along five areas essential toward accomplishing the goal:

- Training of physicians in radiographic reading
- Developing a regional silica laboratory at the Institute of Public Health in Chile
- Developing a respiratory protection program suitable for small businesses
- Training in spirometry techniques
- Developing simple guidance for employers to put controls in place to reduce silica exposures

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[SY24-05]
Chilean Strategy for the Elimination of Silicosis

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Silicosis is the pneumoconiosis most frequent in Chile, an estimated 5.4% of the workforce has a high probability of exposure to silica. A national study (2004 - 2005) showed that at 35% of 31 working sector exceeded the silica legal limit.

In 2005 the Ministry of Health launched a National Plan to prevent silicosis. The Plan's success was mainly due to the Chilean Institute of Public Health (ISP) technical leadership, Niosh - Fundacentro technical support, and PAHO / WHO / ILO support.

Specific products developed up to date:
National Laboratory:
• Laboratories Control National Program Implemented
• trained professionals in laboratories Niosh, Fundacentro and Spain
• purchase of Infrared equipment
• validated techniques:
  - Diffraction Rx
  - Spectrophotometry.
  - Infra - Red with support Niosh.

Silica Control Methodologies: "National Course Control Banding" (2006, 2007) supported by Niosh. Qualitative assessment tools for small businesses adapted from this methodology developed by ISP.

Respiratory Protection: "Selection Guide and Control of respiratory protection" and conducted study of the efficiency of sealing respiratory protection.

Information systems: "Comprehensive Computational Platform" developed

Protocols:
- Technical Analysis of silica
- Surveillance (Health and Environment)
- Environmental Sampling Silica
- Quality Control Unit Radiodiagnosis

Diagnostic:
- Training
  - Radiography Techniques with ILO. (2006, 2007)
  - Spirometry Techniques with NIOSH (2007)
  - Radiographic Reading of physians with Niosh, Fundacentro and ILO (2006, 2007)

§ Quality Assurance Program for Silicosis Diagnosis for certifying Center that perform radiography and spirometry.

While implementing the technical support component of the plan; strategic partnerships were developed with workers organizations, employers and the social actors in order to build the foundations for Tripartite National Plan.

In 2007 Chilean Ministers of Labor and Health conducted a joint declaration reaffirming the Government's commitment to Eliminate Silicosis by developing a Tripartite National Plan, currently in consultation.

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[SY24-06]
Making Work Violence Visible and Preventable: 10 Years of Efforts in Colombia

Julietta Rodriguez Guzman[1], Cabrera, Am[2], Mejia Jh[3], Soler, Mm.[2]

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Introduction:

Colombia reached highest mortality rates for homicide in its history (in the world) in the late 90's. Violence is considered a principal national public health problem. Colombians daily witness or are victims of street or war crimes. To understand general problems and solutions, the National Institute of Forensic Medicine and Sciences created the National Reference Centre of Violence, which operates a National Surveillance Network for Violence NSNV.

Violence poses economical, social and political burdens for social protection systems. Economical stability of the Colombian Worker's Compensation System WCS felt threatened by the excess of injuries or deaths occurring in the workplace (1999) implying economical compensation overload. The NSSV provided broad information, but not managed to fully detect workplace violence. Government issued workplace violence research policies for defining prevention programs.

Material and Methods:
Research, policies, plans and regulations issued and funded by the WCS were done by different Universities, NGO's and other governmental agencies; and their impact was evaluated.

Results:
Preventive programs to control of 5 possible violence types reaching the workplace were designed (2002). Four critical economical sectors were indentified and fully characterized (2005). Prevention policies and programs were implemented for these sectors. Laws controlling psychological harassment and other regulations were issued, being currently implemented.

Discussion and Conclusions:
Workplace violence is strongly related to general violence. Research provided important responses and solutions but remain insufficient. Social protection and economical sectors need to strengthen policies and finance actions for improvement. Information dissemination, training human resources, implementing education processes, and devoting more efforts with greater creativity for workplace violence research still are required. Strategic sectorial alliances involving stakeholders are advisable approaches for effective solutions, as recently proven during the international incident where all Colombians acted as one nation demonstrating the world their will for life and peace.

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[SY24-07]
Surveillance Systems Need to I- Connect to

Prevention Programmes: The Jamaican Challenge.

Elizabeth Ward

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Introduction Development of Surveillance systems must address the issues of data transfer to the end user.
Material and Methods Data for injured patients is captured electronically at major hospitals in Jamaica. The Jamaica Injury Surveillance System (JISS) collects data on Violence Related Injuries (VRI), Unintentional Injuries, Road Traffic Crashes (RTC) and tracks if patients were injured while working for pay.
Results Both the Violence Prevention Alliance-Jamaica and the National Road Safety Programmes use data from VRI and RTC to guide national prevention programmes. More work needs to be done to use the hospital injury data in Occupational Health and Safety Programmes. Health GIS currently locates injury hotspots for targeting of prevention programmes. In 2006 JISS data captured from *13,150 A&E* visits for VRI. Males, accounted for 58% of VRI and most were injured in fights. While 38% of the VRI involved the use of a sharp object the use of blunt objects and bodily force accounted for a total of 47%, and gunshot wounds accounted for 7%. Gender analysis revealed that more females incur VRI from bodily force and sexual assault. Males were more likely to be involved in injures resulting from the use of sharp objects or gunshot wounds. Data has also been used to measure direct medical cost and productivity loses which are estimated to amount to more than 5 % of GDP. The lag time between collection of data and use in prevention programmes still remains protracted.
Discussion and Conclusions
Advances in information technology need to i-connect surveillance and prevention programmes to improve the use in injury prevention programmes in Jamaica.

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[SY25] International/Subregional Communication and Cooperation to Promote Prevention in Francophone Countries

July 1, 16:00~18:30
Room: 311BC, COEX

Chairperson: **M. Ahmadou Yéri Diop**, IAPRP
Moderator: **Annie Leprince**, ISSA Prevention Section on Research

[SY25-01]
Why Symposium of the IAPRP ?

Jean-Luc Marie
Special Commission on Prevention, ISSA, France

[SY25-02]
A Strategic Approach to Better Integrated Activities in Order to Prevent Occupational Accidents in French-Speaking Countries

Cisse Abdourahamane
Interafricaine de Prevention des Risques Professionnels (IAPRP), Mali

[SY25-03]
Obtaining a Better Understanding of Risks for Prevention: Studies Conducted on Specific Hazards: Pesticides, Dyes, Cement, Cotton

Benjamin Fayomi
Cotonou University, Benin

[SY25-04]
Obtaining a Better Understanding of Risks for Prevention: National Observatories and Regional Observatory on Occupational Accidents and Diseases in French-Speaking Countries

Ahoua Nogbou Alphonse
des risques professionnels (IAPRP), Cote d`Ivoire

[SY25-05]
Training for the Prevention of Occupational Accidents: The Training of IAPRP

Benjamin Fayomi
Cotonou University, Benin

[SY25-06]
Communication to Develop a Culture of Risk Prevention: Experience of Communication at CNSS / CPFACE + a Film

Dakissaga Sibiri Raphael
National Social Security Fund, Burkina Faso

[SY25-07]
Communication for Developing A Culture of Risk Prevention: The Campaign for AISS/IAPRP/BIT Communication

Ahmadou Yeri Diop
Interafricaine de Prevention des Risques Professionnels (IAPRP), Senegal

[SY25-08]
Training for Safety and Health at Work: Training by the IAPRP

Birame Faye
Caisse de Securite Sociale, Senegal

[SY26] The Safety of High-Tech Control Systems Takes the Lead in Industrial Workplace Safety

July 1, 16:00~18:30
Room: 321, COEX

Co-Chairperson: **Walter Eichendorf**, DGUV, Germany
Michael Schaefer, DGUV, Germany

[SY26-01]
Safety Standards in Electronically Controlled Equipment

Anura Fernando

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Electronically controlled equipment is becoming "smarter" as embedded software is driven to new heights by faster processors and larger memories. As this evolution in capabilities increases design complexity, safety standards are evolving accordingly -- progressing from a device-level focus to an assembly or system-level focus. This presentation will address new challenges to the assessment of safety-related equipment and the understanding of how device-level faults can lead to systemic failures. The convergence of technologies that contain and exchange information has lead to a world where many different types of products may be interacting with one another as well as with their human users. This continual evolution has resulted in a need for flexible new techniques to assess product control and interactions, including those that contribute to safety in the workplace.
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[SY26-02]
Risks in Mechatronical Systems

Juraj Sinay, Gabriele Heoborn, Ivan Majer

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Risk assessment is an important tool of prevention in safety and health at work. Safety of machinery and other products is an integral part of safety and protection of workers at work, as well as a protection of public. The level of technical safety of mechanical systems has reached relatively high standard. The risk assessment procedures mechanical devices are well known and standardised in a design phase as well as during operation.
Problems could arise when the mechanics is integrated with the electronics, computing, control systems and new technologies (e.g. molecular engineering, biotechnology, etc.). That's why the attentions of safety researchers and experts is focused on the mechatronialc systems - computer controlled electromechanical systems, including robotics and automation systems. The barriers of efficient risk assessment appear from the different failure models of computing part and mechanical part. While the computing failure model is based on the principle "0" and "1", the mechanical failure model works another way.
The contribution describes theoretical principles of risk assessment of mechatronical systems on practical example of such system.

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[SY26-03]
A Holistic Approach to Safety Automation: How Technology, Global Standards and Open Systems Help Increase Productivity and Overall Equipment Effectiveness

Daniel Hornbeck

Rockwell Automation, United States

How high technology advancements in control, changes in global regulations and open systems contribute to enable a holistic approach to safety in the industrial workplace. Safety and efficiency cannot be separated in the industrial

workplace. If a safety system is difficult to use and places unrealistic restrictions on productivity it will not be used in the workplace as intended. It is critical that both productivity and safety be considered in deploying safety systems. Advancements in communication technology, communication theory, common safety standards (e.g., IEC61508, IEC61784), combined with open multi-vendor systems have created the enablers for taking a holistic approach to automation requirements. This holistic approach which includes safety allows an increase in productivity and overall equipment effectiveness while increasing the level of safety in the workplace.

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[SY26-04]
Integration of Safety Aspects in the Design of Safety Related Parts in the Control System of Printing Machines

Albrecht Gloeckle, Klaus Dieter Becker

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The integration of Safety and Ergonomics in the Construction and Design is fundamental important for the maintainance of industrial health and safety standards. A substantial contribution of the risk reduction results in the design of safety related parts of control system. From november 2006 follows with the publication of the new "EN ISO 13849-1:2006: Safety of machinery-Safety related parts of control systems- Part 1:General principels of the design" as well as the retirement of the EN 954-1 until november 2009 is a substantial change which influences the design of the safety related parts of the control system in the mechanical engineering.
Machines of the Printing and the Converting industry could be very complex systems. Today paper converting machines and systems could be 120 metres long. Cleaning and maintance is regularity necessary and closeness to the danger zones. Guards are intended to protect persons against risks associated with danger points. In the case of open interlocked guards it is necessary that an unexpected start up of the machine is certainty prevented. Based of the increasing automation in the mechanical engineering the safety functions are intensive linked with the function of machines. The new standard EN ISO 13849-1 attempts to combine the complex propabilistic approach of the IEC 61508 with the generally recognized concept of categories of the EN 954-1.
In the view of the EN ISO 13849-1 the represented examples of stopping function in the case of opening an interlocking guard and the prevention of start up are emphasizing the integration in the design of control systems of Printing machines with considering of the new approach.

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[SY26-05]
Achievement of Safety at Work and High Productivity of Factories with Robot Control Cell Production System

Yoshio Sekino, Ikuo Maeda, Kazuya Okada, Ikkan Nishihara, Wataru Tokumoto, Toshihiro Fujita

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In factory automation industry where production systems are constructed with increasing number of robots, operators and robots are required to interact directly and production systems must comply with safety measures set by the leading international safety standard ISO 12100. In industrialized countries, production style is shifting from mass production of few product types to multi-product type, variable-volume production, and production sites are shifting from labor intensive to automatic production. For the new demand, we have developed our original “Robot Cell Production System” which, for the first time in the world as Senju-Kannnon (thousand-armed goddess of mercy) model, achieved in providing both high-level safety at work, and also productivity.

The system consists of a robot module, jig module, parts feeding tray module, HMI module, and special work module, which can be arranged flexibly to meet the demand of the local production site. In the basic structure, two main robots perform assembling operations in a well coordinated, synchronized movement. In system setup, teaching, process changeover, repairing and maintenance, operators working with robots directly are exposed to dangers and must be protected by appropriate safety measures. For the robot cell production system, safety of operators was achieved by performing risk assessment. The possible hazards were evaluated and proper measures were taken to avert accidents and to protect operators’ occupational safety.

The new cell production system achieves occupational safety and productivity which have long been regarded difficult to achieve at the same time, and proved practicality in actual applications. The innovative concept of the system

has been recognized widely. In this paper, we report on our original robot cell production system that ensures safety for operators and also productivity.

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[SY26-06]
Laser Scanners, the Outdoor Challenge

Otto Goernemann

SICK AG, Germany

Safety laser scanners are protective devices based on the physical principles of retroreflectivity and time of flight (TOF) measurement. Retroreflectivity is also the origin of some shortcomings of these protective devices.

Due to the operation principle safety laser scanners shall meet some requirements concerning dimension of the objects to be detected, their retroreflectivity and the detection range. In the worst case a safety laser scanner should be able to detect objects as small as a foot or an ankle and with a poor reflectivity, like black cord, neoprene or leather. This required sensitivity is also the disadvantage of laser scanners. High reflective dusts or fogs may also be detected, sunlight and other infrared radiation source may blind the system, snowfall and rain can significantly reduce the reliability.

Although safety laser scanners are worldwide widely used as protective devices for machinery, the use in outdoors applications like area safeguarding of cranes, collision prevention in outdoor automatic guided vehicles, safeguarding of mobile platforms was until now nearly impossible.

The contribution gives a short introduction in the technology & function principle of laser scanners and the problems involved with their use in outdoor applications. The development of a safety laser scanner system suitable for outdoor uses and the results of the first successful applications in Germany leading to the certification of an outdoor laser scanner system are presented.

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[SY27] Advances in Ergonomics Application for Preventing Work-Related Musculoskeletal Disorders

July 1, 16:00~18:30
Room: 203, COEX

Co-Chairperson: **David Caple**, International Ergonomics Association
Kazutaka Kogi, Institute for Science of Labour, Japan
Min Keun Chung, POSTECH, Korea

[SY27-01]
The Use of Ergonomic Checkpoints for Reducing the Risk of Musculoskeletal Disorders

Kazutaka Kogi[1], **David Caple**[2], **Toru Itani**[3]

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In improving workplace conditions related to safety and health risks, ergonomic checkpoints compiled for supporting preventive actions by local people are increasingly applied in various work settings. Examples are IEA/ILO Ergonomic Checkpoints (1996), ISO/TS 20646 and action manuals for participatory action-oriented training in small workplaces and agriculture. The IEA and the ILO are collaborating to further develop ergonomic checkpoints adjusted to industrial workplaces and agriculture. Experiences in developing and applying ergonomic checkpoints are reviewed to know types of checkpoints effective for reducing local muscular overloads.
These experiences confirm that it is important to compile checkpoints based on good practices in reducing local muscle loads. Multiple improvements are found useful for controlling these loads. Usually, the checkpoints used relate to improved materials handling, work postures and operations at workstations, physical environment and work organization. Case studies show that multifaceted applications of these checkpoints can actually reduce local muscular loads often with concrete impacts on productivity. In presenting information for use by local people, it is confirmed useful to address repetitive tasks in constrained postures, lifting and carrying loads, sustained strenuous postures, proper use of tools and fixtures, and work environment such as thermal conditions and illumination. The use of action checklists listing these multifaceted improvement actions as a participatory tool is spreading,

and the focus on simple, low-cost improvements is always conducive to undertaking multiple risk-reducing actions.
It is recommended to utilize ergonomic checkpoints addressing multifaceted low-cost improvements in reducing the risk of musculoskeletal disorders in various work settings. Concrete know-how information presented by the checkpoints has real impacts. The use of these checkpoints combined with action checklists is particularly effective for facilitating participatory steps leading to concrete results.

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[SY27-02]
Incorporating Worker Participation Within Risk Management Procedures for Musculoskeletal Disorders

Wendy Macdonald

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The ILO-OSH *Guidelines on occupational safety and health management systems* specify worker participation as "an essential element of the OSH management system", and the value of a participatory approach in a wide variety of ergonomics contexts is also well established. However, the optimal role of worker participation in managing the risk of work-related musculoskeletal disorders (WMSDs) is unclear.

Ergonomists have developed a variety of methods for WMSD risk assessment; these typically entail analysis of systematic observations and some associated physical measurement, with little or no participation from workers themselves. On the other hand, ergonomists also recognise the need to take account of the time periods for which workers are exposed to observed hazards, and such information has to be obtained from other sources including workers themselves. Further, individual workers are the *only* source of valid information about many of the psychosocial hazards that can substantially affect WMSD risk. It is therefore clear that some degree of worker participation in WMSD hazard identification and risk assessment is essential to achieve comprehensive coverage of all risk sources. In addition, the effective identification and prioritisation of potential risk reduction measures requires a high degree of local expertise; similarly, implementation of resultant changes requires a high level of commitment from those involved. For both these purposes, worker participation is likely to be beneficial.

This paper identifies the relative strengths and weaknesses of formal, standardised procedures versus more informal, participative approaches to WMSD risk management, with particular reference to a recently developed procedure that encompasses both the physical and psychosocial hazards, and to the ILO/IEA *Ergonomics Checkpoints* approach. Some contextual issues likely to influence the optimal balance between these various approaches are discussed.

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[SY27-03]
Assessment of WMSDs in SME's in India

M Surianarayanan[1], R. Raghunathan[2], B Krupa Shankari[1], Kalpana Balakrishnan[2]

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Ergonomists opine that occupational injuries and incidents are attributed to improperly designed tasks leading to higher accident rates, faulty judgment and lower productivity. Poor workplace designs can present ergonomic risk factors called stressors. These stressors include: repetition of work, power of the muscles to perform work and the postures assumed by the workers during work. Further ergonomic hazards can originate not only from poor work place design, but also due to improper selection of worker to carry out a specific job.

Demands of a task or combination of tasks may include maintaining postural stability, executing physical actions, and/or performing cognitive tasks. The impact of these demands is in turn dependent upon the abilities of the individual performing the task. In this paper we have focused on determining the difference between the resources available to the individual (Work Capacity) and the demands required by the task (Workload).The workload has been categorized as physical, postural, psychosocial and environmental. A model described in the paper has computed the overall workload. The mismatch between the work capacity and workload determined the workers susceptibility to WMSDs. The model has been verified with 300 subjects.

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[SY27-04]
Ergonomic Intervention for Prevention of

Musculoskeletal Disorders in Korean Manufacturing Industries

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This study aims to report the prevalence status of WMSDs and some example ergonomic intervention programs in manufacturing industries in Korea. The prevalence of WMSDs rapidly increased from 1999 to 2003, while it has continuously decreased from 2004, when the WMSDs-related legal system was enacted. To enhance the prevention of WMSDs, some large companies voluntarily performed the ergonomic assessment for stressful tasks using OWAS, RULA, NLE, etc. as well as the legal examination of risk factors of WMSDs. In this study, we introduce two ergonomic intervention programs, which were conducted in an automobile manufacturing company and in a heavy industry.

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[SY27-05]
Ergonomic Considerations on the Shroff Counter Design of General Outpatient Clinics in Eliminating the Musculoskeletal Health Hazards to Workers

June, Yuen Ching Wong[1], H. P. So[2], Y. K. Yiu[2], Grace, S. P. Yeung[2], Y. W. Lai[2], Eric, M. L. So[2], Patrick, T. W. So[2], S. Y. Mui[2], Stella, W. C. Cheng[2]

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With the constraints of the old design and limited space, the shroff offices of most of the General Outpatient Clinics (GOPCs) in Hong Kong place potential health hazards to the workers. The clinic in-charge of the GOPCs of the Kowloon West Cluster (KWC) realized the importance of the good engineering control to eliminate health hazards on workers at the source. Thus, the Occupational Medicine Care Service (OMCS) Team of the KWC was invited to give ergonomic consultation on the design of the shroff office of one of the GOPCs in the cluster before the renovation work be carried out.
The OMCS team had made an environmental inspection to the office in April 2007. The team carried out the procedures of observation, assessment, interviewing and problem identification. The risk factors of the workstation design, working environment and working habit were indentified. The Occupational Therapist of the team contributed by applying the knowledge in ergonomics including anatomy, physiology, anthropometry, kinesiology, work capability analysis, etc, in preventing musculoskeletal injuries. With the contributions of expertise from various team members through discussion, recommendations were made on the areas of (1) Working Environment; (2) Workstation Layout; as well as (3) Task Organization.
Good ergonomic design in the workplace offers a means to "victory over the oppressive forces that continue to make work less productive, less pleasant, less comfortable, and less safe." (Osborne, 1982). It is hoped that with the success of this pilot project, the recommendations made can act as a blueprint for all shroff counters design of the GOPCs in the future. The ultimate goals were to promote safety and health of workers so as to decrease the financial costs associated with lost work time, medical treatment, and retraining of employees.

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[SY27-06]
Ergonomics-Based Intervention Program Builds Bottom-line Results: A Transportation Industry Sector Case Study

Zoe Robinette

Studio A, Incorporated, United States

An ergonomic-based intervention pilot program was introduced in 2004 in response to excessively high incident rates and lost time musculoskeletal injuries (MSDs) incurred in 2003 at a Fortune 100 transportation company's Northern California district. In 2003, average costs per 100 full time employees (FTE) and lost work time cases at the district were much higher than the national and internal corporate average.
Research conducted by the United States Department of Labor in 2004-2005 indicated that MSDs were the leading cause of injury and illness in every major industrial sector. More than four out of 10 injuries reported in 2005 were MSDs, unchanged from 2004. More than one third (34 percent) of the MSDs reported occurred in the trade, transportation and utilities industry sectors (1,2,3).
A group of 450 Teamsters participated in a comprehensive on-car ergonomic, range of motion (ROM) and body mechanics assessment program conducted on the job. Despite the prevalence of reported MSDs in the transportation sector, empirical data gathered from the pilot

program conducted in 2004-2005 revealed significant reduction in incident rates and lost work time MSDs. Direct workers' compensation costs were reduced by 60%; indirect workers' compensation cost reductions were not reported. Costs to deliver the two-year pilot program were returned within the first four months of operation (5).
The success of the two-year pilot project has been recognized by the corporate administration and subsequent separate pilot projects have been implemented at three other districts in the country. The benchmark of this pilot study may serve as a key outcome measurement for subsequent corporate ergonomic-based interventions. The processes and application defined in this study can be replicated in any industry where job demands and functions involve similar work tasks.

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[SY27-07]
Low-Cost Ways of Musculoskeletal Load Reduction

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Prevention of musculoskeletal disorders is one of the fundamental elements of safety and health in the workplace. In many Asian industrial enterprises, improvements on materials handling and workstations are implemented with a view towards preventing musculoskeletal disorders, and with multiple impacts both on safety and health promotion and on productivity enhancement. Neck, shoulder, arm and low-back pains and discomfort are prevalent among workers in many workplaces. Positive experiences have shown that simple and low-cost improvements in materials handling and workstations can offer visible impact, reducing and eventually eliminating such pain and discomfort. Workers experiencing musculoskeletal disorders have trouble concentrating on their tasks, due to pain leading them to commit errors in their work. In workplaces where workers are exposed to musculoskeletal disorders, they face the risks of serious work-related injuries from accidents involving machinery or misuse of hazardous substances. Musculoskeletal disorders impede productivity at workplaces. Eliminating the risk of such disorders promotes the enterprise's goals, with direct positive effect on productivity.

Entrepreneurs in the Philippines have shared positive experiences of reducing the risk of work-related musculoskeletal disorders. Simple technical interventions have been successful in lowering the risks associated with deep bending, squatting, twisting or arm elevation postures. Workloads involving the carrying of heavy and bulky materials have been made more convenient by introducing well-designed push carts in many Philippine enterprises. These good local examples have inspired the implementation of many simple and low-cost solutions in both materials handling and workstation designs. It is encouraging to see that improvements helping to eliminate the risk of musculoskeletal disorders can be carried out by mobilizing resources and ideas available at local workplaces.

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[SY27-08]
WMSDs Prevention and Management Program in Korea and KOSHA's Activities

Wook Kim, Heung-Koo Choi, Seong-Kyu Kang

KOSHA, Korea

In Korea 2006, Industrial Accident Compensation Insurance accepted 6,233 claims for Work-related Musculoskeletal Disorders (WMSDs). The number of accepted claims reported in 2007 increased to 7,723. It was increased about compared to last year. Korea has great concerns about WMSDs because it causes not only economic burden for compensation but also decreases of workers' ability, even after medical treatment.

Korea Occupational Safety and Health Agency (KOSHA) has suggested 「**Work-related Musculoskeletal disorder Prevention and Management Program (WMSD PMP)**」 as an integrated solution to prevent WMSDs because risk factors of WMSD are very complicated and multifactorial. KOSHA prepared a detailed technical standard of 'WMSD PMP' to support enterprises with problems of WMSDs.

The 'WMSD PMP' is a systematic approach for preventing WMSDs including managerial and engineering aspects, such as 'Leadership of business owner and participation of labor', 'Education and training', 'Ergonomics job analysis', 'Workplaces improvement', 'Medical treatment' and 'Management of WMSD PMP'.

Forty-one workplaces have implemented WMSD PMP up until 2007 under the regulation of Industrial Safety and Health Act. KOSHA reviewed the WMSD PMP of each enterprise and furnished them with technical information. The results of reviewing were classified into three categories and returned to the enterprises for a feedback.

As a result, the number of WMSD patients in 41 enterprises decreased by 38.8% in 2005, 35.5% in 2006 and 39.2% in 2007.

KOSHA published 15 different types of WMSD PMP manuals, each depending on the business sectors. These manuals will be beneficial to enterprises which have similar problems to WMSDs.

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[SY28] Roles and Responsibilities of Leadership in Safety and Health

July 1, 16:00~18:30
Room: 402, COEX

Moderator: **Erin Grossi**, Underwriters Laboratories Inc., United States

[SY28-01]
Establishing a Global EHS Program Where External Expectations Run High

Michael Brown

Underwriters Laboratories Inc., United States

Through many years of hard work, dedication, and unparalleled engineering expertise, UL has earned the respect and privilege to be the world's leading safety testing and certification organization. With high external expectations, our company's public safety mission is also emulated internally by ensuring that UL employees are afforded a safe, healthy, and environmentally sound workplace.

Recent environmental, health and safety (EHS) efforts have focused on the establishment of an internal set of policies and procedures aimed at integrating UL's EHS program globally. A major emphasis has been placed on risk assessment, employee participation, and training. Mr. Brown's presentation will focus on the tools, programs, and strategies that either have or plan to be implemented for a global EHS program; including conformance to ISO 14001 and OHSAS 18001 management systems, establishing and maintaining a workplace safety culture, developing employee involvement programs, and effectively using technology.

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[SY28-02]
UL and Disney Teach Safety Smarts!®

Barbara Guthrie[1], **Nathalie Hawkins**[2]

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Accidents and injuries are the leading cause of death in children, adolescents and young adults. Engagement, empowerment and education are key to reducing accidents and injuries. Where children today grow up in a culture of concern, anxiety and caution, reassuring, clear, confidence-inducing messages about preventing and dealing with unsafe situations in life is critical. Disney & UL have partnered to launch a global safety education program, empowering students to make safety smart decisions.

Disney & UL will co-present their program featuring Safety Ambassadors Timon and Pumbaa from Disney's *The Lion King* and Bill Nye the Science Guy. Disney and UL, together encourage other leaders to do their part in making the world a safer place.

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[SY28-03]
UL and Disney Teach Safety Smarts!®

Nathalie Hawkins[1], **Barbara Guthrie**[2]

[1]Walt Disney Parks and Resorts, France, [2]Underwriters Laboratories Inc., United States

Accidents and injuries are the leading cause of death in children, adolescents and young adults. Engagement, empowerment and education are key to reducing accidents and injuries. Where children today grow up in a culture of concern, anxiety and caution, reassuring, clear, confidence-inducing messages about preventing and dealing with unsafe situations in life is critical. Disney & UL have partnered to launch a global safety education program, empowering students to make safety smart decisions.

Disney & UL will co-present their program featuring Safety Ambassadors Timon and Pumbaa from Disney's *The Lion King* and Bill Nye the Science Guy. Disney and UL, together encourage other leaders to do their part in making the world a safer place.

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[SY28-04]
Leading with Safety: The Path to Excellence

Ricky Yu

BST, United States

As the business climate continues to change, it is critical to think beyond traditional safety management paradigms that limit safety to a discreet function of one department with one target area. Rather, we need to recognize that successful safety initiatives depend largely upon effective leadership. While the importance leadership is recognized in a conceptual way, many leaders do not really know what is required of them.

This course is designed for anyone who wants to take safety performance to the next level and build a foundation for far-reaching organizational excellence. Learn:

1) to recognize improvement opportunities at all levels of the organization,
2) what characteristics your organization needs to develop to become high-performing,
3) to leverage existing safety efforts,
4) why leadership is integral to developing that culture, and
5) the concrete steps forward to become an organization that truly leads with safety.

This presentation puts forward a basic understanding of the behavioral-based concepts, examples, and results from a variety of industries, as well as critical success factors for initiating any safety-change initiative. The concepts outlined reach beyond safety, and are applicable to all critical business outcomes.

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[SY28-05]
Counterfeiting - The Crime of the 21st Century

Brian Monks

Underwriters Laboratories Inc., United States

Product counterfeiting has increasingly become a global issue over the last decade. Experts estimate that counterfeit products make up about 8 percent of world trade, with much of the revenues from large-scale operations going to organized crime. This presentation will focus on how counterfeit products passed off as originals take advantage of legitimate company resources such as product marketing efforts and the brand equity of trusted trademarks or patents.

Counterfeiters manufacture low-quality and unsafe products for pennies compared to what legitimate companies must invest in producing genuine products. Once the counterfeiter applies a forged trademark or certification mark to these substandard products they can earn up to1000% profit from these illegal goods. Without a doubt, the high profits associated with counterfeit products are what fuel the entire counterfeiting industry and ultimately motivate these criminals to place the health and safety of the consumer at risk.

Mr. Monks' presentation will stress the need for new effective strategies and coordinated efforts in partnership with a large number of agencies. UL has worked hard at developing effective partnerships that are designed for combating the illegal activities of counterfeiters. Counterfeiting has been a problem for centuries. It has become a global marketplace issue that has great economic implications and creates safety concerns. It is now time to take proactive steps against a common enemy, the counterfeiter.

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[SY28-06]
A Leader's Vision of Corporate Social Responsibility

August Schaefer

Underwriters Laboratories Inc., United States

This presentation will explore the responsibilities that leaders in safety and health have with respect to Corporate Social Responsibility (CSR). In particular, the presentation will focus on UL's own CSR vision to achieve commercial success in ways that honor ethical values, respect people, communities, and the natural environment, and produce an overall positive impact on society. CSR covers a broad spectrum of a business. Employees must feel respected, valued, and trusted and it is important to foster a culture where people do the right thing without regard to personal interest. Company leadership must provide a safe environment for staff and customers, while meeting or exceeding all relevant environmental regulations. CSR also includes being engaged in local communities and working with suppliers and partners who value the same ethical

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principles. Mr. Schaefer's presentation will describe methods to uphold business ethics by providing oversight measures to assure compliance and ways to effectively engage stakeholders such as customers, consumers, and government agencies, without compromising the integrity of the corporate mission. UL has made significant strides in these areas by investing heavily in UL University, developing a Standards of Business Conduct, and promoting CSR at the corporate, divisions, and affiliate levels.

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[SY29] Working Women's Health and Maternity Protection

July 1, 16:00~18:30
Room: 304, COEX

Chairperson: **SoonNyoung Yun**, Seoul National University, Korea
Moderator: **Hyeon Suk Kim**, Shinheung College, Korea

[SY29-01]
Emerging Occupational and Environmental Health and Safety Risks in Female Workers of Nail Salon Industry

Oisaeng Hong

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In many countries, the nail salon industry is booming. There has been a growing occupational and environmental health concerns about chronic exposure to harmful chemicals among nail salon and cosmetology workers. Many young women who are providing manicure and pedicure services handle solvents, acrylates, biocides in dust and vapor form, glues, and cosmetic products that contain chemicals known to be carcinogenic and suspected to cause reproductive or other health problems on a daily basis. Reported health problems include respiratory illnesses, asthma, serious skin and eye irritation, cognitive dysfunction, and even miscarriage and infertility among the women stemming from prolonged exposure to the chemicals used in poorly ventilated environments. Despite the daily, consistent exposure of nail salon workers to these toxic chemicals little is known of the chronic health effects related to this type of exposure.
In the U.S, State of California recently passed the Safe Cosmetics Act (SCA). This Act requires manufacturers to disclose to the Department of Health Services (DHS) if their products contain chemicals known by the state to cause cancer or birth defects, and authorizes DHS to investigate. Furthermore, the California Healthy Nail Salon Collaborative was formed to proactively address the health impacts of chemicals in cosmetics linked to cancer or birth defects. Collaborative members, who are composed of public health and occupational and environmental advocates, and community-based groups, are committed to work on ensuring the effective implementation of the SCA while providing health and safety training to the nail salon workers and to conduct research on nail salon workers' health and safety issues. This presentation will address emerging occupational and environmental health issues facing the nail salon community and discuss policy, research, and training strategies.

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[SY29-02]
Work-related Stress among Women In Poland and UE's Priorities in the Field of Labor Safety and Hygiene

Iwona Bojar[1], Ewa Humeniuk[2], Alfred Owoc[3], Katarzyna Sygit[4], Hubert Bojar[5]

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[5]Institute Of Agricultural Medicine In Lublin, Poland

Due to a clear division in the European Union's labor market between professions dominated by women and men, both sexes experience different work environments. Sex inequality at work place as well as outside it affects women's safety and health protection at work.
The purpose of the study was to assess women's exposure to psycho-social stress inducing factors at work – to determine the scale of the problem (work-friendly environments and worker-unfriendly).
The study was conducted in April and September 2007 in Lublin province among four groups of working women: working in agriculture (N-146), working in office (N-51), seamstresses (N-51) and medical representatives (N-68). The standardized Subjective Work Assessment Questionnaire was used as a research tool.
The obtained results were statistically analyzed using the T-Student test. Results obtained in each profession group

were compared and the impact of socio-demographic factors on increasing stress related to each work assessment factor was analyzed.
Examining women's sense of work-related stress revealed that women in agriculture, medical representatives and seamstresses experience high level of stress while office worker a medium level. There were statistically significant variations in the level of stress in each profession group. ($p<0,05$) The highest average values were observed in the group of women working in agriculture (8,2) and medical representatives (7,8); slightly lower in the group of seamstresses (6,9). Women working in offices have a sense of stress on a level close to average values (6,4). The largest burdens for women examined were sense of psychological burden of work, lack of rewards and sense of uncertainty.
Work that is an emotional burden and a double burden of a paid job and responsibilities at home negatively affect state of working women's physical and mental health. Thus there is a need for organized prevention of work-related stress by regional and international institutions.

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[SY29-03]

Relationship among Presenteeism, Absenteeism and Turnover Intention of Nurses in Japan

Mikako Arakida[1], Rika Oawa[2], Ayako Okuyama[2], Young-Mi Lee[2], Sumie Suzuki[2]

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Purpose
Nursing is one of the occupations that the physical and mental load is heavy. Taking an appropriate rest and promoting the health care relate to the performance of their work. This research aimed to examine the relation among nurses' perceived health condition, presenteeism, taking rests and the turnover intention.
Methods
A cross-sectional questionnaire survey for 3199 nurses at 13 hospitals in 5 prefectures in Japan was conducted on October, 2007. Respondents were 2109 nurses (response rate: 64.8%). Female nurses (n=2073) were analyzed. The contents of the questionnaire were Stanford Presenteeism Scale (SPS), turnover intention score and demographic data. SPS measures work impairment score (WIS) as presenteeism due to primary health condition (PHC), work outcome score, and absenteeism. Then, nurses' data was compared with the data of SPS for female workers (n=870) who worked for 5 manufacturing companies in 2006.
Results
The nurses' average age was 28.0 ± 7.3 years old. The rate of nurses who had one or more health condition was 94.3%. WIS was significantly correlated with turnover intention score (r=0.52). The rate of nurses who took the absence of four hours or more last month due to PHC was 7.0%. For the female workers in manufacturing companies, that rate was 35.6% though 89.7% of worker complained one or more health conditions.
Discussion
Most nurses had the health conditions, and the health condition caused the decrease in perceived work performance. Nevertheless, nurses could not take appropriate rests or vacations. Moreover, the decrease in the work performance (WIS) was correlated with the turnover intention. This result suggests that the delicate health management and the management of shift-work are the key strategy in order to exploit nurses' work performance efficiently.

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[SY29-04]

Analysis of Research About Workplace Violence Towards Hospital Nurses in Korea

Souk Young Kim

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Workplace violence is recognized as a significant occupational hazard in healthcare service sectors. Workplace violence covers a broad spectrum of events ranging from harassment and bullying to homicide. Workplace violence is found more frequently in women than men because its exposure is strongly associated with 'people' work. Women's job are generally characterized as 'people' work.

Purpose: This study is aimed to analyze the trend of research on workplace violence towards hospital nurses in Korea, and to suggest a direction for future research of workplace violence. **Method**: A total of 20 studies published from 1993 to 2008 were examined according to the experience rates by the types of violence and perpetrator, the emotional response of nurses after the harmful experience, cause of violence etc. **Results**: The number of workplace violence studies has been increased since 2001, but it was not enough till now. Experience rates of verbal abuse of hospital nurses in Korea were

59.9 ~ 99.2%. The rates of physical violence and severe physical violence were 12.1 ~ 23.4%, 1.9 ~ 9.5% respectively. Experience rates of sexual harassment were 25.7-60.4%. The leading cause of violence that was reported by nurses was the personality of patients. The most common feeling experienced by nurses after an event of violence were embarrassment and anger. **Conclusion**: We need more investigation about workplace violence towards hospital nurses and develop the program for workplace violence prevention and test the effect of intervention.

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[SY29-05]
Women, Solvents, Pregnancy and Teratogenic Risks

Cardoso Elie Patrick

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INTRODUCTION

The industrialization is leading to professional risks, chemical and biological, for women. The risk of pregnancy and the teratogenic risk provoked by enzyme inducing solvents are considered .

METHODS

Enzymatic induction leads to the detoxification of an associated chemical substance, provoking a beneficial, undesirable or adverse effect.
In women taking an oral contraceptive, this "detoxification" results in inactivation of the contraceptive pill and hence a risk of pregnancy despite good compliance to the oral contraception (undesirable effect).
In working women who are also taking a teratogenic drug, the risk is major (adverse effect).

RESULTS

In a woman taking an oral contraceptive, an enzyme inducer accelerates the metabolization of the contraceptive drug, with the result that the plasma concentrations of the estrogen or progestogen components of the pill become insufficient to ensure effective contraception and there is a risk of pregnancy.
The problem becomes severe when the oral contraception is an imperative precaution prescribed by the physician for a patient who is already taking a teratogenic drug, like for example isotretinoin for the treatment of acne.

Caution is necessary when using these treatments carrying a teratogenic risk in 4 cases:

1 associated enzyme inducing drugs.
2 professional exposure to enzyme inducing solvents.
3 a cumulative enzymatic induction effect in the presence of an inducing drug and an inducing solvent (leading to maximal induction and thus maximal detoxification).
4 an additive enzymatic induction effect in the presence of several inducers of the same nature, solvents or drugs (leading to maximal induction and thus maximal detoxification)..

There are numerous enzyme inducing drugs (rifampicin, phenobarbital, psychotropic agents, etc...).

Enzyme inducing solvents are very commonly used (ketones, ethanol, toluene and xylenes, etc...)

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[SY30] Workplace Activities on Occupational Safety and Health Management System (OSHMS)

July 1, 16:00~18:30
Room: 320, COEX

Chairperson:
Yoshiyuki Fukuzawa, Ministry of Health, Labour and Welfare, Japan

[SY30-01]
Occupational Safety and Health Management Systems - The Singapore Experience

Siong Hin Ho

Ministry of Manpower, Singapore

In Singapore, the Ministry of Manpower has promoted and nurtured the development of Occupational Safety & Health

Management Systems (OSHMS) at the workplace as a key component of its self-regulation strategy. Besides putting in place a strong legislative framework for OSHMS, the Ministry has also collaborated with partners and industry groups on its implementation. The multi-pronged approach which has been taken includes enhancing the existing regulatory framework with the introduction of the Risk Management regulations in September 2006. This is followed by the publication of guidance materials such as Code of Practices and National Standards, and compendiums for OSH Risks and Risk Management. Furthermore, to recognize companies which have effectively implemented OSHMS, award schemes such as the Annual Workplace Safety and Health Awards have been introduced. To assist small and medium sized enterprises in the implementation of OSHMS, the Ministry has rolled out the bizSAFE program. Other industry capability building tools include the development of a competency framework in OSHMS and safety auditing, and the Introduction of Construction Safety Audit Scoring System (CONSASS) to help contractors systematically identify areas of weakness in safety and health management in work sites.

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[SY30-02]
Experience and Issues in Development & Implementation of Occupational Health & Safety Management System in India

Madan Kulkarni

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This Paper presents a first hand experience of development & implementation of the national standard on Occupational Health & Safety Management System (OHSMS) in India. The **Indian Standard, IS 18001** on OHSMS was first published by the Bureau of Indian Standards (BIS) in 2000 and was revised in 2007 to make it more compatible with ISO 14001:2004. It was developed by the national committee of BIS, under the chairmanship of Director General of the National Safety Council of India (NSCI). The Panels that prepared the drafts of the standard also worked under the chairmanship of NSCI officers.

NSCI has also played an important role in **developing a national system** for the **implementation & certification** of the standard by adopting a **five-pronged strategy**. It comprised, creating awareness on the standard through technical publications/ conferences/seminars & training; competence building in industry through training & consultancy services; competence building for certification auditors through training; and providing support to BIS in its decision making to start certification scheme for the standard.

This Paper also highlights a few important issues regarding effective implementation of OHS Management System, need for an international standard on OHSMS and maintaining quality of certification.

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[SY30-03]
The Implementation of an Occupational Safety & Health Management System in the National OSH Movement of Indonesia

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Indonesia is an archipelago with over 17,000 islands and 210 million population consisting over 350 tribes.
In terms of Occupational Safety and Health we are still striving to improve OSH culture among our work-force since 65% of them are just graduated from primary school besides some of them area illiterate people.
In the moment out of 100,000 workers annually 20 fatalities and about 100 permanent disabilities occurred, because of that last January 2008 during our OSH Month we launched our National OSH Movement based on Ministrial Regulation Number 05 year 1996 on OSH Management System.

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[SY30-04]
"Implementation of Occupational Safety and Health Management System - Hong Kong Experience"

Wah-Shing Tang

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With the introduction of safety auditing by the Occupational Safety and Health Council and the incorporation of safety management system in the Airport Core Projects in the

early nineties, Hong Kong has begun to move to the direction of safety management approach in tackling workplace health and safety issues. The ultimate goal is to have self-regulation by the proprietor and his workforce to reduce accidents and improve safety standards. Based on this initiative the Works Bureau and the Housing Authority have included the safety planning and independent safety audit as the contractual requirements for public works and building projects. The two railway corporations, other utility companies and leading contractors have also made the move towards self-regulatory safety management.

In 1995, the Government conducted a comprehensive review of industrial safety with a view to mapping out Hong Kong's long-term safety strategies. The Review concluded that for Hong Kong to achieve high standards of health and safety at work, enterprises must embrace self-regulation and safety management. Following the impending enactment of the Factories and Industrial Undertakings (Safety Management) Regulation, the concept of the implementation of safety management system is further extended to private construction projects, shipyards, factories and other designated industrial undertakings.

After years of implementation of safety management system, it is pleased to see that there has been a reduction in the accident rate in public works contracts and Housing Authority contracts. The initiative of assessing contractors' safety performance through the independent safety audit has produced positive results in improving the safety standard of the industry. Safety audits are essential if a safety management system is to be implemented properly.

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[SY30-05]
Safety Control Theory Applied in Workplace Activities on OSHMS

Wang Xianhua

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In this paper, on the principle of the modern control theory, three control modes of the safety system were described. According to the current situation of the safety management, the suggestion was put forward that is how to use the three control modes of the safety system in the enterprise as the tool of the accident control. Especially ideas of the self-controlling ability of the safety system applied in work's teams hazard predict was introduced.

Key word: Safety System, Safety Control System, Workplace hazard predict

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[SY31] An Interactive Global Perspective on Developing Health and Safety Management Systems

July 1, 16:00~18:30
Room: 103, COEX

Chairperson: **David Evans**, Insitution of Occupational Safety and Health, United Kingdom

[SY31-01]
Management Systems - Soft Systems Methodology

Rakesh Maharaj
ARMSA Consulting, United Kingdom

[SY31-02]
Briefing on Workshop Exercise - Examination of Cultural Influences on Safety Management System

David Evans
Link Associates International Ltd, United Kingdom

[SY31-03]
Corporate Governance - The Role of the Safety Professional

Philip Mcaleenan, Ciaran Mcaleenan

Expert Ease International, United Kingdom

Corporate Governance requires that the conventions and rules which direct the relationships between all the stakeholders ensure that the framework of structures and procedures achieve growth and stability whilst maintaining the integrity of the organisation and the stakeholders. However, taken at face value, this definition exhibits ignorance of the dialectic that governs the resolving of the contradictions that are inherent in the differing spheres of influence within an organisation and its social milieu. This

in turn impacts upon the organisation's efficacy in creating the correct conditions for achieving growth and stability.

At this congress it is appropriate to focus on the role of the safety professional in the context of the organisation's responsibility to ensure the safety of the workforce and others who are affected by its activities. The safety professional exposes some of the contradictions that pervade the issue of effective governance, particularly when, as a function of management, that role conflicts with the notion that the competent company is composed of proficient decision making employees. Too often responsibility for safety falls to the safety professional and, despite efforts on his part, he is often under-resourced, under-valued and scapegoated for failure on the part of fellow managers. Here-in lies the contradiction; a dichotomisation has been created whereby safety has been separated from and transformed into an adjunct to a task where once it was an integral aspect of competent performance by each worker. As such it is susceptible to "bottom line" thinking whereby the "unnecessary" is jettisoned in the face of dwindling profitability, and held onto only to the extent that legal minimums are met. An organisation that takes the reactive approach to safety will generally have a perception that safety is divorced from day-to-day business operations and are sub-ordinate to their demand on the time of senior management.

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[SY31-04]
Taking into Account Work Activity to Change Security Management Systems Into Health Management Systems

Joel Maline[1], Daniel Depince[2], Francois Guerin[3]

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A SMS induce three levels of questions:

The first question deals with the notion of system.

The second question deals with the meaning of management :

The third question is about the notion of security :

Beside the « classical risks », new risks are emerging. Their nature is changing since they highly depend on organizational variables. These variables concern not only the production organisation and work organisation but also the employees' work, which has an organizational function in its concrete realization.

Those new risks are a priori "no danger" risks, as Repetitive Strain Injury or psycho-social risks, which turn to be the major risks in the European Union.

Thus we go from this idea: "it is sufficient to suppress a danger, or to take away the employees, to strike out a priori the harmful effects of the danger", to a new problematic which consists in, with a view to a real primary prevention, conceiving up stream the work itself as a prevention factor and in giving means to operators so that they manage their own prevention.

The SMS is an effective tool for the general running of a prevention project, thanks to its data processing and reporting procedures. But it is not, in itself, a tool fostering action and changing when risks from organizational nature occur. To take into account those new risks, the SMS must evolve to a Health Management System.

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[SY32] KAIZEN Activities as a Strong Strategy at the Workplace Level

July 1, 16:00~18:30
Room: 334, COEX

Chairperson:
Masaharu Kumashiro, The Society for Occupational Safety, Health and Ergonomics, Japan

[SY32-01]
The Occupational Health Activity That Will be Required Going Forward is KAIZEN - How to Promote KAIZEN Activities and Case Studies -

Masaharu Kumashiro

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KAIZEN has recently made it into the English language and is being used around the world. KAIZEN is "work improvement". KAIZEN is not something that is taught in a classroom but rather is said to be a concept that arose from the workplace. Originally, the purpose of KAIZEN was to make a little effort to make work easier, more efficient, or safer. It is not an exaggeration to say that KAIZEN activities

are the forte of Japanese industry. KAIZEN activities were initiated during the beginning of the 20th century in the field of industrial engineering (IE). Recently, however, KAIZEN is also often heard in the field of occupational health. One reason given for this is the contribution being made by ILO through Work Improvement in Small Enterprises (WISE) that is being promoted as part of the occupational health activities in developing countries. The know-how for promoting KAIZEN activities that integrate the three aspects of IE, occupational health, and ergonomics is not being accumulated, however. This report presents 1. the basic KAIZEN concepts based on work conditions and ergonomics concepts and IE techniques, 2. a procedure for KAIZEN training within an on-the-job training format based on the fundamental concepts of 1. above, 3. an introduction of a KAIZEN case study for preventing lower back pain accompanying the development of large-scale equipment, and 4. an example of a successful application to apple growing and handling work of KAIZEN techniques that were transferred from secondary industry to this primary industry.

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[SY32-02]
How to Promote KAIZEN Education - Training of KAIZEN Experts for Local Companies -

Koki Mikami[1], Masaharu Kumashiro[2]

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The manufacturing industry of our country has been affected by globarization, fewer children & aging, shortage of successors, etc. In addition to that, the provinces, especially the northern main island called Hokkaido, where the author dwells in, has several problems such as low accumulation of industries, thin unexpanded manufacturing structure, weak cost competitive power, etc. Fortunately, the Main Island-based companies, chiefly major automobile-related companies, have come into Hokkaido because of good obtainable of manpower, but the local companies which have mainly dealt in public works are having a hard time establishing trade relations with them because of the weakness of quality, cost & delivery aspects. To find some way out of the difficulty, the auther, et al. are now giving at Hokkaido Institute of Technology improvement expert training courses which have both KAIZEN power and management power as open courses for experts, based on FY 2005 academia-industry joint projects on training core human resources for manufacturing by the Ministry of Economy, Trade and Industry. The "QCD KAIZEN kills" curriculum of the education program is based on the Ergoma Approach Method advocated by the author, et al. In this paper are reported the results and effects of the KAIZEN which the trainees of the courses conducted from the aspect of Safety and Health at work, one of Eromoma items.

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[SY32-03]
The Measure Against Occupational Safety and Hygiene in Consideration of Aging Factors

Junichi Akatsu[1], Masataka Irokawa[2], Masaharu Kumashiro[3]

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The aging of workers is progressing in all over the world including Japan.
Before aging of working population progresses, the contents of work changed from physical work to the leadership work. But in these days, the numbers of worker who continuously do physical work until the retirement are also increasing. And many workers are also carrying on physical work as a part time job after the retirement.
We should have the two aspects to solving of the occupational safety and health in aging society. One is an aspect on the health care because it is necessary for the aged worker to work with their disease. Another one is an aspect on the management of work conditions & ergonomics to correspond to the change in a physiological and psychological characteristic according with aging.
In this report, the work-related accidents for the aged worker were examined from the viewpoints of work conditions & ergonomics and work environmental management.

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[SY32-04]
Study on KAIZEN Method to Small and Medium Sized Enterprises in Japan

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Nowadays, "KAIZEN" becomes world standard keyword from Japan. Japan has made famous management tools, like QC-circle, small group activity, or KYT. KAIZEN is not only the tool for improvement but system with movement or thoughts for whole management of enterprises.

Main Purpose of this study to find and introduce many "Good Practice" for other factory or industry to refer their workshop by employee participation on KAIZEN with ergonomic approach.

The categories of those companies were Sozai (Delicatessen, or Home Meal Replacement) factory, Aluminum die-casting factory, Socks manufacturing factory. Each company has 50 to 300 employees, and it's belongs to Small and Medium Sized Enterprises in Japan.

First case of KAIZEN on home meal replacement factory, there were many female workers as the features. Those were introduced as KAIZEN with main consideration that height of work space for workers, like as adjustable work table and reachable food case for each worker.

Second case on Aluminum die-casting factory was similar to first one's because inspection line had many female workers. A difference of each case was method of adjustment the height, making specific table at former one or simply inserting thick rubber sheets on the floor for workers' best work of the table at later one.

Third case on Socks manufacturing factory was same "Good Practice" for adjustment work table. It was easy and cheap idea as inserting wood board under workers but more effective on the productive line. This factory made original stool fitting for processing machine with special radius on its shape.

Commonly, those three factories had some or whole area with high grade of temperature in it. All factories supplied spot cooler or local cooling system for workers. It was useful for workers to maintain highly work motivation through supplying comfortable work environment as view point of industrial psychology.

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[SY32-05]
Improving Working Conditions at an Iron Manufacturing Plant

Hiroshi Udo[1], Akihiro Udo[2], Ben Branlund[2], Akiko Udo[2]

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Proper implementation of ergonomic measures can be effective in the treatment of musculo-skeletal disorders such as low back pain and cervicobrachial disorders. Workers in steel mill plants in Japan are rarely given proper ergonomic training, even if trained, they lack the proper directions to actually impelement the ergonomic methods in their work environment. The purpose of this paper is to report on the various participatory ergonomic measures implemented in one iron manufacturing plant. This case study was conducted within the maintenance division of its steel mill.

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[SY32-06]
The Occupational Health Activity That Will be Required Going Forward is KAIZEN - How to Promote KAIZEN Activities and Case Studies -

Atsushi Funahashi

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It is thought KAIZEN is to introduce new machines, but true KAIZEN is to use wisdom.KARAKURI KAIZEN means that small soap makes work easier, more efficient, or safer.

KARAKURI KAIZEN is to concentrate what on you want to improve, to use economy, and to give only a necessary function. KARAKURI KAIZEN pools wisdom without spending money, and makes it for myself. KARAKURI KAIZEN uses motive power that exists in the natural world like gravity etc. or has existed already. KARAKURI KAIZEN needs no new power source. KARAKURI KAIZEN makes material flow smooth and automation low-cost. When the machine breaks down, it is possible to repair by employees because KAIZEN is done by employees. too.

Now Mazda is positively advancing "KARAKURI KAIZEN". Four effects are expected by KARAKURI KAIZEN. 1) Improvement of workability, 2) advancement of safety, quality, and productivity, 3) activation of working place, and 4) cultivation of human resources. And then, four effects make positive growth cycle in a spiral manner.

It is held for one week at the Mazda headquarters factory "KARAKURI KAIZEN device exhibition", a lot of visitors comes every year. The technology of KARAKURI KAIZEN is applied to the finished product (Mazda's automobile).

I will present some cases of Mazda's KARAKURI KAIZEN activity.

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Speakers' Corner

Speakers' Corner

[SC11] General Safety

July 1, 12:15 - 13:15
Room: 203, COEX

Moderator:
Phil Wadick
Monash University, Australia

[SC11-01]
The 30 Years of the Safety and Health at Work Legislation in Brazil - A New Glance

Lie Liung, Marcelo Tacitano

Ministry of Labour and Employment, Brazil

In 1978 the Brazilian government regulated the Act nº 6514/77 enacting the 28 ordinances about Safety and Health at Work that is, in spite of some alterations, until today almost the same, therefore a 30 year-old legacy.
Over these 30 years, deep innovations were introduced, mainly in the Constitution of 1988 that enlarged the initial steps of 1934.
Under political aspect, the approved labor laws represent a larger commitment with the social rights.
Under the social prism, it gave answers for most of the relative claims like improving life conditions, health protection and so on.
Under juridical prism, it was constituted in a model that admits the collective autonomy, stimulating the union freedom, the self-organization of the associations and the collective negotiation.
Hence, with the coming of the Constitution of 1988, although in an subtle way, the workers and the entrepreneurs begin becoming aware and prepared about subjects related with the Safety and Health at Work.
In the 1990´s, aiming the improvement of the environmental conditions at work, the Ministry of Labour and Employment (MTE) introduced the tripartite system, legitimating actions of Protection to the Work.
The evolutionary stages of the work, specially the Safety and Health, mentioned previously, the commitment of the citizenship takes for this beginning of the XXI Century, to a new one glance, or a new stage known as the Protection of the Worker's Rights Enlarged that will be the "life quality in the work".
The 30 years of the safety and health at work legislation in Brazil - a new glance seeks to synthesize the evolutionary stages of the Work in Brazil, its legislations, the statistical data of the occupational accidents and diseases and the unionization.

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[SC11-02]
Trend Analysis of Work-Related Disabilities in Insured Workers in Iran During 1996- 2005 and Its Economic Burden on Social Security Organization

Hedayatollah Adibnia

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PROBLEM DEFINITION
Data demonstrate that occupational injuries cause thousands of fatalities in the different sectors of Iranian industries every year. They have major impact upon human integrity, but they also bring about high costs for a Social Security system.

OBJECTIVES
The aim of this study is to describe trend of work related disabilities over the course of time& its causes for setting priorities for improving safety standards. Meanwhile their total direct costs for Social Security were estimated.

METHOD
The trend analysis of occupational disability was studied retrospectively. A 10-year period was selected. Data were obtained from the bureau of statistics of Social Security and also from records of 35 medical commissions in 2006. The disability rates were analyzed despite its causes, by age, sex, work experience, economic activities.

RESULT
There were 43601 cases of disabilities over the period of study, 21.6% of them were work-related. Disabilities by age bracket is mainly in 35 to 40 years bracket and although males with 99% predominate. 22.8% of cases had up to one year experience. Metals and electrical machines industries were the most important economic activities in terms of work-related disabilities. Carelessness and over time working of workers and unsafe guarding of mechanical tools were the most significant cause of disability. The upper extremities injury were the most frequent description of bodily part injured. Besides of the

days lost and medical expenses, direct total costs for Social Security system per disability case, include an average of 180 million Rials as disability pension payment.

CONCLUSION
Work-related disability reporting is poor in Social Security System. By analyzing the rates of disability in the different sectors, appropriate targets and priorities for increased strategies to prevent fatal injuries can be suggested. Pre-employment medical examination of workers and comprehensive rehabilitation programs for disabled workers should be encouraged.

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[SC11-03]
Major Depression in Canada: Variations Across Occupations and Industries

Alain Marchand, Melissa Murray, Pierre Durand, Marcel Simard, Andree Demers, Marie-Eve Blanc, Elyse Picard

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This study examined the role of occupations and industries on the risk of major depression in the Canadian workforce. Data came from Cycle 2.1 of the Canadian Community Health Survey (CCHS) of Statistics Canada (2003) containing 32 279 workers nested in 139 occupations and 95 industries. The prevalence of major depression was estimated at 8% with point estimates of 5% for males and 10% for females. Adjusting for work conditions, family situation, social support outside the workplace, and personal characteristics, logistic regressions analyses revealed lower risk of major depression, compared to cashiers, for workers in the following nine occupations: managers and directors in public administration; protective services; construction and transportation; clerical supervisors; childcare and home support workers; other sales and related occupations; heavy equipment operators; trades helpers and labourers; machine operators and related workers in textile processing. Concerning industries, mining, oil and gas extraction workers were found at lower risk of major depression compared to workers in educational services, while higher risk of major depression was observed for workers in non-store retailers, information services and data processing services, rental and leasing services, and social assistance. The results also indicated that gender was not moderating the relationships. Overall, the study highlighted implications for actors and policymakers and identified potential targets for intervention in specific segments of the work market.

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[SC11-04]
Towards Advances in OSH for SME in Brazil: A Fundacentro Survey on Work Related Accidents and Illnesses in Three Industrial Branches

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Fundacentro, Brazil

Introduction: This paper aims to present and discuss the results of an unpublished survey carried out by FUNDACENTRO (Brazilian Institute for Occupational Safety and Health), with the support of SESI (Social Service of Industry), in the small and medium enterprises (SME) of three Brazilian industrial branches - furniture, footwear and clothing production, in order to promote better work environments. The research identifie and measured the occurrence of work accidents and occupational illnesses, by way of fact gathering over a three years period from 2002 to 2004.

Methods: The research was carried out in the worker compensation branch of the National Institute for Social Security (INSS) and it was based on a thorough content analysis of the official work accident reports. The data were analyzed considering the characteristics of the accident and its consequences; the worker characteristics; and the size and the industrial branch of the enterprises.

Results: The data showed that the relative number of accidents was higher in the furniture-manufacturing branch, followed by the clothing and shoe industries. The furniture branch showed the higher relative number of typical accidents while the shoe industry showed the higher relative number of occupational illnesses and the clothing industry the higher relative number of transport accidents. Considering the size of the enterprises, it was observed the large and medium size enterprises, and not the microsized industries that were responsible for the relative majority of accidents.

Discussion and conclusions: As a whole, its results indicated that the general existing conditions in SME need to be improved for injury prevention and safety promotion in the face fo the multitude of these enterprises distributed in the vast Brazilian territory. News paradigms are necessary for carrying out further research and for the development of a specific public policy for SMEs to achieve better performance on OHS.

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[SC11-05]
Activities of the Central Institute for Labour Protection - National Research Institute (CIOP-PIB) as the Polish National CIS Information Centre

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The Central Institute for Labour Protection-National Research Institute (CIOP-PIB), the OSH leading research institute in Poland, fulfils the role of the Polish National CIS Centre since 1960 - only one year after the creation of the International CIS Centre and the whole network. Taking part in the activities of the worldwide network of the institutions, acting as CIS Centres, gives a possibility to acquire the latest, valuable information on international developments, events and good practice in the field of OSH, as well as to disseminate information on national achievements in this area in other countries.

CIOP-PIB is a leading institution determining the scientific foundations for the Polish Government in the scope of shaping the OSH policy as well as designing solutions for healthy and safe working conditions. Among others the Institute is a coordinator and performer of multi-annual research projects.

The activities of CIOP-PIB are briefly described, as research and development determination of exposure limits; standardization in line with the requirements of European and international standards; testing and certification of machinery and manufacturing devices as well as personal and collective protective equipment; implementation and certification of OSH management systems; certification of the competence of personnel and educational bodies active in OSH; education and training, consultations, promotion and publishing. Library and information activities are also described, with the emphasis on CIS activities and on the cooperation with CIS Centres network, among others in the common elaboration of the international information sources (eg. CISDOC database, electronic newsletters, websites), thesauruses, exchange of documents and information. To promote OSH in the Polish and foreign societies the Polish Nationał CIS Centre develops the website in Polish and English, prepares the database in English on Polish OSH literature, promotes in Poland documents and information acquired from CIS network, runs information activities for Polish and foreign users.

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[SC11-06]
The Korean Life Change Unit Model for Prevention on the Workers of Major Accident Area

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Behavior models have provided an accident proneness concept based on life change unit (LCU) factors. This paper describes development of the Korean Life Change Unit (KLCU) model for workers and managers to Korean major accident area, and to evaluate its application. This model is based on intensity analysis of stress caused by LCU factors from an eastern perspective. The result of the paper shows that the death of parents is the highest stress-giving factor to the employees. The next stress-giving factors are the death of spouse and the loved ones, followed by the death of close family members, the death of close friends, changes of family members' health, unemployment, and jail term. It turned out that these factors have a serious effect on industrial accidents and work-related diseases. The death of parents and close friends are ranked higher in KLCU model than in that of Western society. Crucial information for industrial accident prevention in real fields will be provided. Therefore, the provided information will be useful in the safety management program for accident prevention.

Key Words: Proneness Concept, LCU factors, Intensity Analysis, Industrial Accident Prevention, Safety Management Program

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[SC12] General Health

July 1, 12:15 - 13:15
Room: 208, COEX

Moderator:
Eun-A Kim
KOSHA

[SC12-01]
Strategic Approaches in Occupational Safety and Health

Sven Timm

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Due to the fast developing globalization there is a worldwide tendency to strengthen strategic approaches in occupational safety and health (OSH). On the global level this tendency is strongly enforced by strategic position papers of the International Labour Organisation (ILO - Promotional Framework for OSH) and the World Health Organisation (WHO - Global Plan of Action on Workers' Health 2008-2017). This is the same for regions of the world such as the European Union (EU) and its member states.

In order to become a success story these strategies should be on every level in major parts in line with all relevant policy fields such as health, labour market policy, demography intervention, corporate social responsibility etc. Nonetheless OSH strategies off course have to be adapted to the individual needs of national or regional societies and economies. For a sustainable success of these strategic approaches in OSH it is essential to implement all relevant stakeholders in order to reach the goal of safe and healthy workplaces all over the more and more globalized world.

Also in Germany - under the auspices of the federal ministry of labour - all relevant actors in OSH including the German Social Accident Insurance (DGUV) are on the way to establish a joint OSH strategy. The German OSH strategy (GDA) is an integrative part of the European Union (EU) Community Strategy for OSH 2007-2012. Very important in the framework of the strategic planning of the German OSH strategy in the first campaigning period 2008 to 2012 are the identification of priority areas of application and measures. Another important aspect is the establishment of (at best quantified) targets of which the relevant indicators are planned to meet within the campaigning period. In this presentation major elements of the EU and the German OSH strategies are presented.

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[SC12-02]
Challenges in Producing Criteria for Diagnosis of Occupational Diseases

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The prevention of occupational diseases is aided by their early recognition. In order to recognize occupational diseases, agreed criteria are necessary. Clear criteria also enable consistency in collecting data on the occurrence, extent and trends in occupational diseases, and allow suitable comparison of experience between countries and regions. The European Union (EU) convened an expert group to produce and update criteria for a range of occupational diseases on an agreed list. Difficulties encountered and limitations apparent in the preparation of the EU criteria include:

a) Selection of the process for determining criteria. While evidence-based reviews have been advocated as the gold standard for management of many clinical entities, there is limited availability of such evidence for occupational diseases. Consensus opinion supported by access to experts in academic institutions was used.

b) Agreeing the list of occupational diseases. Comparison of the EU list with those produced by other agencies (e.g. ILO) and different countries show variation in the number and nature of conditions listed.

c) Use of diagnostic criteria. While clinical criteria will aid in management of individual cases of diseases, there are concerns in using these criteria for determining eligibility for compensation. This is especially for diagnosis of conditions based primarily on a history of symptoms with no available confirmatory tests.

d) Competing occupational exposures and non-occupational causes that can both lead to the same entity.

e) Deciding on levels of exposure necessary to cause occupational diseases for respiratory or skin sensitizers and for malignancies.

f) Relevance and use of occupational hygiene data in diagnosing disease.

This description of the EU expert group's experience can allow other organizations to consider similar or alternate

strategies for lists of occupational disease and criteria for diagnosis.

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[SC12-04]
International Comparison/Recognition of Occupational Diseases: Are We Prepared for the Oncoming Challenges?

Hector Upegui, Dr. Adriano Bastiani

Munich Reinsurance Company, Germany

Occupational diseases(ODs) attract the attention of many interest groups. All of the parties concerned agree that victims of ODs should receive just and fair compensation for their health condition. However, after analyzing more than 10 different ODs insurance models across the world, we conclude that in addition to the already known difficulties with diagnosing ODs, differences of opinion also exist on the means of designing appropriate compensating mechanisms, what brings difficulties when coping with labour market mobilisation and flexibilisation, emerging occupational risks, prevention and compensation.

In our analysis of more than 10 different systems around the world we found that, in comparison with the past, occupational accidents are under much better control than occupational diseases. All workers' compensation insurance systems worldwide are challenged with the possible financial burden of occupational diseases, and have sought different solutions to cope with this challenge, going from full retention of the risk to complete exclusion. However, as daily life combines with working conditions, for instance stress and musculoskeletal disorders, there is a major difficulty in coping with these risks, especially to establish the scope of coverage as well as for prevention, compensation and rehabilitation under workers' compensation systems.

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[SC12-05]
Respiratory Symptoms and Pulmonary Function Amongst Workers in a Rubber Wood Sawmill Factory in Nakhon Si Thammarat Province

Naesinee Chaiear[1], Jamon Ngoencharee[1], Nutjaree Saejiw[1], Wiroj Jiamjarasrangsi[2], Suphagaphan Ratanamaneechat[3]

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Background and aims: Expansion of rubber wood industries in Thailand results in increasing number of workers potentially being exposed to some rubber wood dust. However, it is still unclear whether rubber wood dust exposure can cause obstructive airways diseases.
Objectives: To study prevalence of respiratory symptoms and abnormal pulmonary function and potential factors associated with those abnormalities among workers being exposed to rubber wood dust.
Design: Cross-sectional study was used in this study.
Materials and methods: The study subjects were 340 workers working in a rubber wood sawmill factory in Nakhon Si Thammarat province. Data was collected by respiratory health questionnaires and spirometric testing according to the ATS 1994 criteria. Workers were classified into three groups: low wood dust exposure($\leq$1.9 mg/m^3); moderate wood dust exposure (2.0-4.9mg/m^3); high wood dust exposure($\geq$5.0 mg/m^3).
Results: The response rate was 82.1% which the majority was female workers. The means age and work duration were 36.7 years (SD=8.48) and 6.2 years (SD=4.07) respectively. The prevalence rate of upper and lower respiratory symptoms were 67.0% and 63.1%, respectively. The prevalence of abnormal spirometric testing was 20.6% (obstructive type 4.4%, restrictive type 10.5%, and small airway diseases 5.71%). The prevalence rate of possible and probable asthma was 64.2% and 2.5%, respectively. These prevalence rates were not significantly different according to exposure levels. Factors, which were potentially associated with the upper respiratory symptoms, were female (OR 2.03, 95%CI1.10, 3.78) and being atopic (OR 3.63, 95%CI1.88, 7.0). The factors, which were associated with the lower respiratory symptoms, were having history of asthma in family (OR 3.95, 95%CI 1.32, 11.9).
Conclusion: Workers who were exposed to rubber wood dust, especially female or atopic diseases were highly likely to develop obstructive airway disorders. Further investigation should be carried out in order to justify a definite diagnosis.

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[SC12-06]
Prevention of Work Related Musculoskeletal Disorders in Hotel

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Objective: Work-related musculoskeletal disorders (WMSDs) have been researched in various occupational groups but little in hotel workers. By the labor law, the company has a duty to study the hazard factor of WMSDs every 3 years from 2004. At mid-level hotel, Kitchen cook, Food and beverage (F&B) waiter & waitress and Front desk receptionist & bell are studied for their work risk factors. Alternative plan is made, carried out and evaluated.

Methods: For hazardous factor study, Ergonomic Awareness Check-list by interview, Questionnaires for Musculoskeletal Disorder Symptom Survey and ergonomic tools (RULA, REBA) and for satisfaction research, self-administered questionnaire made by researcher is used.

Results: There are 6 tasks which have risk factors by the Ergonomic Awareness Check-list. The 6 tasks are reception, video display terminal (VDT), in Front desk receptionist, luggage handling in Front desk Bell attendant, food handling and cooking in Kitchen cook, and handling in F&B waiter & waitress. The ergonomic tools, REBA & RULA analysis showed same results with the check-list. Mostly these are action level 3, it indicates action is necessary soon & now. The self-administered questionnaire showed the increase of physical burden degree.
The alternative plans are implemented as ergonomic, managemental, and medical. The ergonomic plans are handsfree, mat for relieving fatigue, moving carts, etc. The managemental plans are physical exercise training to prevent injury. The medical plans are early detection, treatment and rehabilitation. Survey of self-administered questionnaires is used for evaluation of implementation. The satisfaction ratio is more than 70%.

Conclusion: The relationship between the performance of hotel work and WMSDs is evident. Further studies for cook, waiter & waitress, and other hoteliers are needed for prevention and recognition of WMSDs. Reduction of exposure and effect to WMSDs needs work organization and voluntary involving of individual workers.

Keywords: WMSDs; hotel worker: ergonomic tool

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[SC13] Improvement of Working Conditions / Physical Hazards

July 1, 12:15 - 13:15
Room: 304, COEX

Moderator:
In-Seop Lee
KOSHA

[SC13-01]
Hazards in Match Stick Producing Factories and Safety Concern for Industrial Hygienist

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Safety matches are essential consumer commodity considered necessary by all segments of the general public. Today 500 billion matches are used each year. In India the production of safety matches industry dates back to 1910 where the technology learnt from immigrant Japanese families settled in Calcutta were shifted to Virudhunagar district in southern India due to dry climate, cheap labour and availability of raw material from neighboring states. Match stick producing factories are largely located in this district in India. 55 to 60 % of country's requirement is met from this place .Nearly 55 % of workers are employed in these sectors. The Match making is labour intensive. Mechanized, semi mechanized and cottage type industries are involved in this process. Many women, children, elderly and particularly handicapped persons are employed in these sector.

Match is a small stick containing solidified mixture of flammable chemicals deposited on one end. The chemicals like phosphorous, sulphur, glass powder and various other oxidative chemicals are used in producing the match head and match box. The primary process involved is processing timber logs for veneers and splints, waxing, preparing head chemical and side coating of the box using different chemical ingredients. The hazards associated with producing these match stick and match box were identified as an industrial hygienist. The occupational hazards like total and respirable dust exposure, heat stress, illumination and noise during the work were studied. Based on the field

study conducted in these types of industries the safety and precautionary methods followed including the possibility of using potential sustainable raw materials will be discussed in detail in the conference.

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[SC13-02]
Approach for the Improvement of the Work Conditions in the Oil Industry

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Organisation: Sonatrach human resources

Objective:
It is about a survey on the conditions of work in view of to carry an objective analysis on the existing and to project possible improvements after diagnosis and assessment in an unit of production of Sonatrach in the south.

Method:

- Survey achieved by the analysis of the existing based on a state of the places by a validated questionnaire and of the indicators of approach decrees by the group of work: Card of identification.
- Multidisciplinary team: Physicians of work, engineers security and managers Human Resources
- Choice of the pilot sites different of by the nature of the activity and the process
- Type of work station: Exploitation, maintenance, security, health, laboratory of analysis of the hydrocarbons
- Lasted 12 months

Results:

The survey allowed us to have exploratory results on the conditions of work to the level of the six units investigated relative to:

- The physiological organization of work, and to hygiene
- Protective means and of evacuation
- Assessment of the sensitization to hygiene and to the security
- Feature bound to the nuisances and inherent risks to the conditions of work
- Particular works
- Investigations epidemiological retrospectives

Key words:

- Conditions of work
- Investigation
- Multidisciplinary team

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[SC13-03]
Monitoring of Dust Levels and Health Effects at the Bazhenovskoye Chrysotile Asbestos Deposit

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80 years Yekaterinburg Medical Research Center carried out monitoring of dust levels and health effects at the world's largest Bazhenovskoye chrysotile asbestos deposit. During this period established that all the technological operations of chrysotile asbestos mining and milling are accompanied by the formation of high-disperse asbestos-contained disintegration aerosols. All the identified fibres belonged to chrysotile asbestos. The analysis of dust content at the miners and ore dressing working places has proved to the fact that the concentration at the absolute majority of the working places in mines for the last 37 years (1970-2006) were at the level or below of Russian maximum allowable concentrations (RMAC) – 4.0 mg/m^3 and fibres concentration was 0.2 f/cm^3. At ore dressing at the working places exceeded concentrations 2-3 times the RMAC (2.0 mg/m^3) and fibres concentration was 1.8 f/cm^3.
Improvements of technological processes along with medical and preventive measures taken at the Bazhenovskoye deposit during the past 46 years (1960-2006) resulted in a 10 to 100-fold decrease in MAC concentrations and, therefore, in the lowering of asbestosis, lung and stomach cancer risks. From 1981 till 2006 only 8 mesotheliomas was diagnosis.
The efforts to control the health hazards of various chrysotile dust concentration have focused on a strategy of clinical surveillance and controlling exposures yielding results that indicate controlled using. The experience obtained in the course of medical and hygienic studies carried out by Yekaterinburg Medical Research Center at Bazhenovskoye deposit may serve as a good basis for substantiation of safe allowable controlled application of chrysotile asbestos.

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[SC13-04]
Pulmonary Function Status among Vocal and Blow Instrument Musicians

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Aims and Objectives: 1) To assess the pulmonary function status of vocalists and blow instrumentalists and correlate with duration of practice; 2) To compare their pulmonary function status with the general sample population who are matched for age and sex.

Methodology: Musicians were recruited for the study based on the inclusion and exclusion criteria from various music academies in Chennai, India after obtaining institutional ethical clearance and informed consent. Age and sex matched controls were separate for each arm of the study. Spirometry was performed and FVC, FEV1, FEV_1/FVC and PEFR were recorded. Data analysis was performed using a statistical package.

Results: All four spirometric parameters considered in this study were significantly higher in vocalists than their control group: FVC ($p=0.048$); FEV_1 ($p=0.013$); FEV_1/FVC ($p=0.039$); PEFR ($p=0.012$). In case of blow instrument musicians FVC ($p=0.034$); FEV_1 ($p=0.001$) and PEFR ($p=0.011$) were significantly better whereas no significant difference was observed in FEV_1/FVC ($p=0.748$) as compared to their control group. Duration of practice in terms of hours per week was 20.25 and 18.8 in vocal and blow instrument musicians respectively. Duration of practice was positively correlated with FVC and FEV_1 both among vocalists and blow instrumentalists in a significant manner.

Conclusion and suggestions: Pulmonary function status is significantly better in terms of FVC, FEV_1, FEV_1/FVC and PEFR among vocalists. In case of blow instrumentalists FVC, FEV_1 and PEFR are significantly higher than the controls but FEV_1/FVC shows no significant difference. The better pulmonary function status among musicians may be due to breath control and ventilator muscular training. Hence, it is suggested that music therapy is likely to increase the exercise capacity and pulmonary volumes in patients with chronic obstructive pulmonary disease (COPD). Moreover these findings should be considered during clinical evaluation of musicians.

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[SC13-05]
An Optimized Ventilation Plan for Microelectronics Cleanrooms by Using Computerized Fluid Dynamics

Hyun-Hee Park, Eun-Kyo Chung, Jung-A Shin, Jae-Kil Jang

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Aims : To investigate information on chemical use and exposure control, specifically for performance of ventilation in high-tech microelectronics cleanrooms

Methods : Site-visits of 10 high-tech microelectronics include semi-conductor chips and liquid crystal display(LCD) manufacturing company provided data of process chemical use. one liquid crystal display(LCD) company was examined for evaluating the relationship between workplace concentration and ventilation rate efficiency by using computerized fluid dynamics (CFD).

Results : Acetone concentration in cleanroom for LCD inspection process was 40ppm (n=55) as geometric mean, ranged 7.8~128.7ppm and weakly correlated with ventilation rate efficiency($r=0.44$, $p<0.05$). Resulting from computerized fluid dynamics (CFD), acetone concentration can be reduced 62% when install booth type local exhaust system, the most efficient way among 10 other different ventilation methods like increasing volume of general ventilation, changing the location of workers, supply or exhaust diffusers and install downstream type local exhaust system, etc

Conclusion : we found that volatile organic compounds in cleanroom can be a matter of adverse health effects and the concentration was correlated with ventilation rate efficiency. the most optimized plan to control the contaminants in solvent cleaning work in cleanroom is booth type local exhaust system.

Key words : Ventilation, Cleanroom, Computerized Fluid Dynamics (CFD), Microelectronics

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[SC13-06]
Musculoskeletal Disorders among Sitar (Indian String Instrument) Players

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Background: Playing Sitar (Indian String Instrument) requires a unique and a difficult posture and strenuous activity of the muscles of the upper limb. This study was undertaken to highlight the musculoskeletal problems encountered among Sitar players owing to their music practice.

Objectives: 1) To determine the prevalence of musculoskeletal disorders among Sitar players and elicit the reasons for the same. 2) To determine the gender variation.

Methodology: An observational study was conducted during the academic year 2007-2008 in the Music Department of Panjab University, Chandigarh, India. The test group and controls were requested to fill a pre-tested questionnaire which tried to elicit their health problems specially their musculoskeletal problems. This was followed by clinical examination by a physician after receiving an informed consent. The data was analysed using simple descriptive statistics with regard to the objectives.

Results: A significant proportion of the Sitar players suffered from muscle aches and sprains. More than one fourth were suffering from prolapsed of inter-vertebral disc. The most important cause pointed out was the unique posture of practice.

Conclusion and Suggestions: Sitar players are at a higher risk of developing musculoskeletal disorders than the general population specially prolapsed inter-vertebral disc. Keeping this in mind special exercises should be designed to improve the health status of Sitar players.

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[SC14] Chemical Safety

July 1, 12:15 - 13:15
Room: 320, COEX

Moderator:
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[SC14-01]
Asia's Asbestos Time Bomb

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Asia has experienced many industrial catastrophes: calamitous outbreaks of cadmium and arsenic poisoning, toxic levels of air pollution, killer epidemics of Minamata disease and the explosion of 40 tonnes of methyl isocyanate gas which caused thousands of deaths in Bhopal. Until fairly recently, however, the worst industrial killer in Asia, asbestos, has remained invisible, hidden behind a smoke-screen of industry propaganda and government impotence.

Mobilization of asbestos victims in Japan succeeded in exploding the national asbestos scandal onto the public consciousness. As a result of the "Kubota Shock," the on-going epidemic of asbestos-related disease became front page news and the Government was finally forced to assess the legal and medical needs of the injured. Unfortunately the action taken to date has been inadequate and many of those affected remain marginalized. The efforts of groups such as BANJAN, JOSHRC and the Japan Association of Mesothelioma and Asbestos-Related Disease Victims and their Families will be discussed.

As Japan is the only country in Asia to have banned the use of asbestos, developments elsewhere in the region lag behind. The response of other Asian governments to the asbestos hazard covers a broad spectrum from total denial (Sri Lanka, Pakistan) to unenforced regulation (India, China) to a modicum of progress (Korea, Thailand). The differences in national responses will be discussed and comparisons will be made with the experiences of industrialised countries in North America and Europe.

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[SC14-02]
The Role of Trade Union in the Elimination of Asbestos-Related Diseases

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In accordance with the article 15 of the Russian Federation constitution, in the Russian labour legislation, international principles and norms are more often implemented in the field of regulating safety at work: Conventions and Recommendations of ILO, ISO standards, etc. Within the framework of the agreement about partnership and cooperation with the European Union came into force since 1997, Russia aspires to compatibility of its legislation with that of the European Union, including occupational safety and medicine. It acquires much more importance in connection with the processes of globalization of the economy and prospects of joining Russia to the World Trade Organization (WTO).
At the 60th World Health Assembly, held on 13-23 May 2007, "The global plan of action on workers' health 2008-2017" was adopted.
Preventive medicine at enterprises fulfils the tasks of workers' health safety, medical sanitary support of industrial manufacture, diseases prevention and rehabilitation of workers' health condition, ensuring system co-ordinated action of subdivisions in solving problems of safety at work and health of the personnel.
The participants of Moscow International conference "Trade unions and chrysotile", the representatives of the trade unions organizations from different parts of the world, having listened the world leading specialists on medical-biological problems of chrysotile, exchanged their experience on ensuring safety working conditions at this industry and came to the unanimous opinion about controlled use of chrysotile.
Scientific studies confirm the possibility of decreasing occupational asbestos- related diseases with the help of prevention. The position of trade unions is based on a wide spectrum of the international and Russian scientific studies, confirming the possibility of the controlled use of chrysotile.

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[SC14-03]
Exposure to Chrysotile Fibre in an Asbestos - Cement Factory from 1999 to 2004, Harare, Zimbabwe

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A study to review, describe and analyse data on chrysotile exposure levels obtained in a chrysotile-cement manufacturing factory, in Harare, Zimbabwe, from 1999 to 2004 was undertaken. The study compared fibre levels obtaining in the factory to local and international occupational exposure limits. 571 results were based on personal sampling while 678 were based on static sampling. Mean chrysotile levels ranged from 0.12 f/ml to 0.16 f/ml for personal sampling and from 0.05 to 0.08 f/ml for static sampling.

The results show that chrysotile exposure levels in the factory were well below the Zimbabwe occupational exposure limit of 1 f/ml over the six year period of monitoring. Furthermore only 4.7% of results exceeded the South African OEL of 0.2 f/ml. The majority of results (90.7%) show that they exceeded the American Conference of Governmental Industrial Hygienist (ACGIH OEL) of 0.1 f/ml. Notwithstanding the fact that most of the results exceeded the ACGIH OEL, the chrysotile fibre levels observed in this factory are quite low and may possibly not pose any health risk to exposed workers, as recent bio-persistence studies indicate that at an exposure concentration of 5000 times greater than the ACGIH of 0.1f/ml, chrysotile produces no pathological response. Another study has shown that there is no evidence of increased cancer risk from chrysotile exposure at levels of about 1f/ml. The low levels in the factory may also suggest that the risk of developing asbestosis, lung cancer and other asbestos related diseases may be quite low, since duration it takes to attain a cummulative exposure of 25 f/ml-years, below which asbestosis may not progress to clinical manifestation, invariably range from 156 to 208 years for personal sampling mean chrysotile values and 312 to 500 years for static sampling mean chrysotile values.

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[SC14-04]
The Needs for Toxicological Research into Industrial Chemicals

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There are a great many chemicals used at the workplace and chemical risks are a constant public concern, which often receives broad media attention. In order to better manage these risks, they must be properly assessed, and to do this knowledge in the field of toxicology is required. Such knowledge enables the **hazards** (the intrinsic toxic properties) and **exposure** to be better assessed.
Regulatory toxicology, in particular the European system known as REACH – Registration, Evaluation and Authorization of Chemicals – has led to progress in this

field through the input of toxicological data, obtained using conventional methods.

However there remains a considerable need for more toxicological research, both human and involving the use of experimental models.
Regarding the identification of **hazards**, efforts should focus on finding dose-dependent effects, in particular at low exposure levels, and the development of effective alternative methods (3 Rs : reduce, replace, refine), including for the demonstration of percutaneous penetration of substances. An understanding of the mechanisms according to which toxic substances act can also allow for better extrapolation to humans.
As regards measurement of **exposure,** the scope of human biological monitoring at the workplace should be enlarged. For new bio-indicators to be validated, sensitive analytical methods must be used and minor metabolic pathways must be taken into consideration for organic substances and speciation for metals. Particular stress is laid on the need to propose guideline values that can be used in occupational medicine.

For INRS, the French National Research and Safety Institute, the priority research areas in the above-mentioned areas are carcinogenic, mutagenic, reprotoxic, neurotoxic and sensitising substances, nanomaterials, and multi-exposures. These priorities are also shared at the international level.

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[SC14-05]
Pesticide Exposure and Health Risks among Women of Agricultural Communities in India - Setting the Research Agenda

Sukanya Rangamani

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Women agricultural workers in India are exposed to pesticides while working during processes of cultivation or processing of crop, when spraying occurs simultaneously. Working in recently sprayed fields without knowledge of pesticide toxicity also places them at risk. Sometimes, women help in mixing pesticides and washing pesticide-contaminated clothes of their husbands. Most agricultural labor live near the fields and are inadvertently exposed to pesticides in the living environment.

In reality the health risk due to pesticides is through the life cycle of a woman, with increased vulnerabilities during pregnancy, lactation and for the developing child. In all of these instances, they are never considered being at risk of exposure. Moreover, there are no estimates of the burden of, and the range of health effects, especially reproductive and endocrine effects due to pesticides among women in agricultural work and living in agricultural communities.

Therefore, epidemiological research on estimates of acute and chronic health problems; identification of markers of functional damage; explaining interactive effects of under nutrition and multiple chemical sensitivities and pesticide related health risks is necessary. Also, systematic documentation of exposure patterns in agricultural work and understanding risk perception among women becomes crucial to understand health risks. Gendered research to analyze the vulnerabilities of women to pesticide exposure in the context of sexual division of labor, women's double burden of productive and reproductive roles and power structures in a liberalizing economy also becomes essential.

All of this would help in developing intervention frameworks that empower women to be protected from pesticide exposure. It is also important to identify the deficiencies in treatment practices and resources of health systems. This would help place the policy agenda to create systems for health monitoring that are responsive to the health needs of women affected by pesticide exposure in agricultural communities in India.

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[SC14-06]
Mapping of Chemical Concentrations in a Confined Workplace

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Occupational exposure to airborne volatile organic compounds is governed by the source strength and dispersion of the chemical into workroom air. Air sampling methods to determine this exposure concentration are expensive and time consuming and ignore crucial factors like height of liquid in the container and location of windows. Hence, modeling is preferred.

The purpose of the present paper is to use modeling as a tool for the exposure calculation. It focuses on modeling the exposure to chemicals by volatilization or surface evaporation and dispersion phenomena. The main objective of the investigation is to get a clear picture of the concentration distribution under three cases namely no window and ventilation (box type), only window and no ventilation, both window and ventilation. Extensive literature study was done to find out the various surface evaporation models and concentration distribution models that were available. But systematic evaluation of the performance of the models is needed to use modeling as the standard tool for exposure assessment. In order to validate the models, the concentrations of organic compounds of different volatilities were measured at various locations in the workroom air in the industries and compared with the modeled data.

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[SC15] Occupational Safety and Health Management System

July 1, 12:15 - 13:15
Room: 321, COEX

Moderator:
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[SC15-01]
OH&S Economic Analysis: An Evaluation Tool

M I Barra, Paolo Fioretti, Giuseppe Morinelli, Antonio Terracina

INAIL, Italy

Work-related accidents and illness are still a major safety and health problem in Europe. Workplace accidents can mean pain and disability and can affect the worker's life, both in and out of work and represent a considerable economic burden to employers, employees and to society as a whole. Some of these costs, like lost workdays or lost income, are clearly visible and can readily be expressed in monetary value. For a large part however, economic consequences of accidents are somewhat hidden. Nevertheless, it is possible to get an adequate insight into the costs of accidents, the visible and hidden one, and the potential benefits of accident prevention. A better understanding of these costs would support the implementation of effective health and safety policy at company level.

The aim of this study is to provide a complete analysis of the parameters impacting on cost/benefit analysis, taking into account the ones that can readily be expressed in monetary value, as well as hidden parameters which cannot be easily costed

Purpose of this project is making employers and decisions makers realize that improving safety work conditions results in an wider improvement for their business.

We develop user-friendly tool for assisting companies in their efforts to evaluate the costs of prevention implementation in workplace providing at the same time the estimation of reduction of occupational injury and illness related costs.

This calculation has been developed on Italian industries' system. Moreover a sample of 500 Italian companies certified OHSAS 18001 has been analysed, through INAIL (Italian Workers' Compensation Authority) database, showing a significant cost reduction compared with the other Italian companies of the same branch. As far as we know it is the first time that such a comparison is realized.

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[SC15-02]
Training and Developing H&S Managed System Consultants Who Are Implementing OHS Managed Systems in Brazilian Industry

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This session will focus on the introduction of a three-tiered approach to the development and implementation of an Occupational Health and Safety Managed System (OHSAS 18001) to small and medium sized firms in 6 selected sectors in Brazilian industry. The project included the development of consulting and facilitation skills in health and safety professionals plus others not trained in health and safety. The approach used was to train, mentor and have the trainees apply their knowledge and skills within enterprises that they were working with...the "just-in-time" training was synchronized with the work that was occurring in the firms The intent was to build capacity within the firms and change the culture of the organizations to become more health and safety conscious. The

implementation method used was a three-pronged approach that focused on senior management involvement and commitment, a cross-functional team that worked on developing the infrastructure, and quick win teams that involved workers and gave immediate results. An interim evaluation study was conducted by Dr. Susan Silver, a professor uninvolved in the project at Ryerson University, Toronto, which indicated that the project was very successful at meeting the expectations identified at the beginning of the project.

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[SC15-03]
The Use of OSH-MS and Best Practices at Company Level for Strengthening Corporate Global Competitiveness by the Joint Study of the Employers' Organizations in the Asian Region

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The Joint Study on the use of occupational safety and health management systems (OSH-MS) and enterprise-level best practices was undertaken jointly by the employers' organizations in 13 countries in South and East Asia and the Nippon-Keidanren International Cooperation Center (NICC). The study was aimed at examining the features of ongoing "best practices" in occupational safety and health management in Asian countries and discussing necessary support measures through employers' organizations in the region. Two questionnaire surveys conducted in 2005 of selected sixty-five enterprises and of 13 employers' organizations. The study results clearly indicate the increasing awareness about the importance of securing management-worker commitment for safety and health of workers and about establishing action-oriented procedures for effective risk management. It is found essential to provide multifaceted support measures for ensuring "best practices" in both these aspects. The major factors identified by the study with respect to the enterprise-level best practices need to be addressed in further promoting their spread in different local situations. It is noted that over 95% of the employers' organizations in South Asia and East Asia agree that the "good practice approach" is recognized widely as an important future approach in promoting occupational safety and health. They also consider that the importance of "safety culture" promotion is recognized widely as one of essential future activities in occupational safety and health. The results of the joint study may be used as relevant source materials for promoting occupational safety and health programs among the members of the employers' organizations and for developing international cooperation by the initiative of employers' organizations in the Asian region. Note: The study was supported by the grant aid of Ministry of Health, Labour and Welfare, Japan. More information: NIPPON-KEIDANREN International Cooperation Center (NICC). Home page: http://www.nicc.or.jp/en/index.html

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[SC15-04]
How to Engage Through Change: A Success Story of Changing an Organisation's Occupational Health, Safety and Environment Management System

Maria Petrou, Karen Wolfe

ANSTO, Australia

Are you looking for a way to motivate and engage staff in your Occupational Health, Safety and Environment Management System(OHSEMS)? Is twenty percent participation a measure of a successful initiative?

These were typical challenges faced by ANSTO when changing the organisation's OHSEMS; a new approach had to be taken. Reaching for the stars, we hoped for seventy percent attendance for the launch of the new system. Our reality, one hundred percent participation; a strain on our catering, but what a success!

Monitor and review is a fundamental part of a system. ANSTO's system was dated and not consistent; staff wanted a change. A working group was set up to develop a new user friendly system.

The successes of this project are attributed to the engagement of the end user from the beginning of the process. The critical steps were:

- Identifying the problem and creating a vision – The working group, through consultation, developed a clear understanding of problems with the existing system and developed a new framework.
- Project management –A planned and systematic approach with clear goals and timeframes.

- Staff involvement/network – Champions from across the organisation represented their peers and reviewed external organisation's systems.
- Keep them interested –A Safety Pocket Guide was issued in the middle of the process to keep up staff interest.
- Excite the senses – Flowcharts, checklists, colour coding and branding of the documents were used to capture the audience's attention.
- Celebrate the success – The launch of the new systems was a celebration; food, drinks and presents were handed out.

The success is still evident today; staff are continuing to provide feedback. It is not a system that was imposed upon them but one that they own.

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[SC15-05]
The Economical Facilitate for the Adoption of a Safety Management System in the Italian Welfare System

Lucina Mercadante, Antonio Terracina

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Health and safety at work (OH&S) represent more and more a social issue as well as a competitive factor for companies. In fact the correct management of OH&S elements lead to a reduction of the cost associated to injuries and occupational disease, and can represent a considerable return on the prevention investment.
In a broaden view the real challenge is going towards a social responsibility approach to develop an integrated management system, focused on a "total quality", considered an investments with both relevant social and economic return.
To convince employers and decision-makers of the profitability of improving working conditions, an effective way is provide economic and financial incentives for improving OH&S and corporate social responsibility behaviour.
Authors believe that a Safety Management System (SMS) is one of the most powerful method to achieve this important tool, actually not widely understood among the employers.
Both for CSR and SMS there is not such a means as a ISO standard, as well as for quality or environmental management system; Regarding CSR an ISO standard is currently being written, while for SMS Italian companies more and more use this prevention tool referring to two standards:

- UNI – INAIL guidelines on occupational health and safety management system (SGSL)
- BSI: OHSAS 18001

INAIL, Italian Workers' Compensation Authority, could represents one of the means capable to diffuse the SGSL adoption, by granting a premium reduction for "safe companies".
Among this funding activities, INAIL, since 2000, provide a premium reduction to companies which adopt an SGSL; the reduction is 10% or 5% depending on the size of the company.

The paper show the trend of companies which are adopting a SGSL using INAIL funds, and therefore it explains how a governmental prevention policy can have a real positive impact on safety and health at work.

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[SC16] General Safety

July 1, 12:15 - 13:15
Room: 330, COEX

Moderator:
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[SC16-01]
Building Bridges, Breaking Barriers for SMEs to Improve Safety, Health, Ergonomics and Environmental Protection (SHEEP)

Chitaranjan Saran

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Small and medium size enterprises (SME) employ over ¾ of the workers. This presentation builds bridges, breaks barriers to cross communication. Local SMEs including ethnic food and beverages industries will be contacted to identify occupational safety and health challenges faced by

them in cross cultural communication is critical in ethnically diverse work force and owners of such enterprises.

People from different cultures perceive the same hazard differently. They act upon their perception. This perception is based upon their socio-cultural and ethical values. There are no 'right' or 'wrong' values. What may be right under one society's norms may not be so in a different society. These cultural divides may include gender, age, sexual orientation, languages, ethnicity, management-labor relationships, disciplines/professions, socioeconomic status, geopolitical boundaries and others.

Expectations, motivations and goals of multi-cultural workforce and corporate boardrooms of the global village/ community will be identified and analyzed. Improving SHEEP (Safety, Health, Ergonomics and Environmental Protection) will improve the bottom line.

Limited resources require their wise and cost effective allocation for each component of SHEEP. It is a balancing act for the competing needs of SHEEP, society, and development. This balancing act is based upon the perception of the decision makers of the various needs.

Unprecedented progress in communication, technology, transportation, biotechnology in the 21st century will make the barriers/divides obsolete. In an increasingly diverse workforce and corporate boardrooms, it is essential that the two a) communicate with each other and b) understand the expectations, motivations, and goals of each other. SHEEP challenges of accidental injuries, illnesses, and pollution affect the bottom line and the quality of life. SHEEP factors affecting the bottom line include: workers' compensation, medical and health expenses, environmental cleanup and disposal, lost wages, productivity, quality, morale, work ethics, physical capabilities, and others.

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[SC16-02]
Development of the Worker's Safety Assessment Model Using Work Analysis and Accident Mode Effects Analysis

Kang Bok Lee[1], Geon Ho Kim[2], Seung Hwan Lee[3], Kyong Sik Kang[4]

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Characteristics of safety accidents that have occurred in work places, most of them are caused mainly by worker's habit, and facility and management factors and this implies that any safety and health management system can not fully realize its efficiency regardless of its real quality unless its effects reaches at the level of detailed processes.
Therefore, this research suggests a solution to build a worker's safety assessment model for detailed processes and unit tasks for improvement in current safety management systems.
The worker's safety assessment model refers to a system to optimize the efficiency of safety management systemsby identifying risk and safety characteristics through AMEA and building an associated worker's safety assessment system to improve worker's awareness on safety issues.
Worker's safety will be improved through worker's safety assessment and associatedtask analyses and AMEA systems and this worker's safety assessment model will contribute to further development of safety culture in work places and prevention of possible industrial disaster

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[SC16-03]
Stakeholders' Commitment in Occupational Health and Safety

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Stakeholders' commitment in Occupational Health and Safety (OH&S) within an organization or company is important and vital. Without commitment, implementation of OH&S may remain as a dream that never comes true. Commitment must crystallize at every level of the management system. It must address planning, implementation, measurement and evaluation, monitoring and review processes.

OH&S management system is an inseparable part of an organization's management system. The organization, of course, will have their own people with their vested interest, namely stakeholders. Consequently, if somebody asks who should actually have the commitment to OH&S management system, the answer would be the people who have the commitment to the company management system.

There are many ways to ensure that commitment is present within an organization. The easiest way is to see it from the individual perspective, but can also be recognized in group dynamics.

Every organization must carry out periodical evaluations for every step taken to ensure commitment takes place. In addition to measuring the results, evaluating the process is fundamental.

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[SC16-04]
Effectiveness & Implementation of PSM in Korea

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In Korea, PSM(Process Safety management) system for the prevention of major industrial accidents was introduced in December 1994 by amending Industrial Safety and Health Law , and this system has been enforced from January 1, 1996.After adopting the system, KOSHA has been focusing on actual tasks such as assessment and confirmation of the report, executing state check, technological guidance, and providing education to engineers in the business, etc. in order to settle the system. Finally, KOSHA has analyzed on its results of implementing the tasks such as decreasing of major industrial accident in the business in the same field after performing PSM system

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[SC16-05]
Risk Assessment and Management

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Risk Assessment and Management is a structured tool to manage Risks especially in Health and Safety and is the key to achieving healthy and safe operation. Risk Assessment generally involves:

Identifying – recognizing hazards and significant risks
Evaluate – identify who or what might be harmed, by what means and the severity
Control – the risks, ensure controls are in place, are adequate or whether more should be done. Take action-Hierarchy of control/contingency plans
Record – Document your findings
Monitoring & checking
Review your assessment – have the risks or controls changed.

The key to this process is ultimately behaviour!

The process structurally goes through the various stages of identifying the hazards and assessing the impact or effects the hazard will have upon release. The probabilities of this occurrence are discussed based on available data from experience. The impact of these risks is then evaluated.

For long term, it is desirable to explore a common legislative framework for standardization across borders. The unsafe acts or conditions that can cause the release of the hazards are then identified and preventive control measures instituted. Should any of these controls fail and incident occurs, containment and mitigation measures must be in place. The process logically assists in getting these in place.

All the above information is then complied into a Hazard register that is utilized before any critical activity is carried out.

However, this is not enough. The controls must be maintained to ensure that they work all the time. So there must be a process in place to ensure this. If this process is separate then it becomes an expensive option for the organization for additional process to be implemented.

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[SC16-06]
The Cochrane Occupational Health Field Collects and Disseminates Evidence on Occupational Health and Safety Interventions

Irja Laamanen, Jos Verbeek, Marika Lehtola, Jani Ruotsalainen, Riitta Sauni, Merja Jauhiainen, Iris Pasternack, Maritta Kinnunen-Amoroso

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Nowadays, it is a widely held view that the practice of medicine should have some basis in effectiveness research. The recently developed paradigm of *evidence-based medicine* states that the choice of a specific intervention should be influenced by evidence of its effectiveness. This contrasts with the historical development of health care and occupational health services and the traditional means of eliminating health risks for workers in that context. The

current organization of occupational health services is largely based on consensus between social partners who are guided by the necessity of organizing preventative and/or curative care for workers. This course of action has a solid foundation in a large evidence base on the negative health effects of a wide range of risk factors at work. The problem is that it is assumed that the conventional working methods of occupational health services, such as pre-employment examinations or health surveillance, will always suffice for the elimination of these health risks. At this point, evidence of effectiveness should be used more effectively by occupational health services. There seems to be a discrepancy between the practice of occupational health services and evidence on topics such as advice and instructions for manual materials handling, stress management, and safety interventions. To overcome this problem, occupational health services should become more 'intervention oriented' and use scientific evidence to underpin their interventions. The Cochrane Occupational Health Field has been developed to stimulate the gathering and synthesis of scientific evidence on occupational health interventions. The Field can support occupational health and safety professionals apply research evidence in their work and increase the use of intervention methods.

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[SC17] General Safety

July 1, 12:15 - 13:15
Room: 334, COEX

Moderator:
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[SC17-01]
An Explicative Model of Safe Work Behavior - Revealing Areas for Intervention

Dong-Chul Seo, Earl Blair, Mohammad Torabi

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This study attempted to test an explicative model of safe work behavior originally suggested by Seo (Safety Science, 2005, pp. 187-211) to reveal the mechanisms by which the following contributory factors influence safety behaviors of individuals at workplaces: (a) Perceived safety climate, (b) perceived hazard level, (c) perceived work pressure, (d) perceived risk, and (e) perceived barriers. Perceived safety climate was operationalized as management commitment to safety, supervisor safety support, co-worker safety support, employee participation, and competence level. The safety climate was measured by the SSCS (Seo Safety Climate Scale), a validated scale used in more than 10 different countries (Journal of Safety Research, 2004, pp. 427-445). Because the model was validated only in US grain industry, this study attempted to cross-validate the model in another industry, specifically in a service industry that performs leak repairs, hot taps, valve repairs, and the like. Data were collected from 699 employees in 2007 from a US based company. The second-order factor model to explain safe work behavior was tested using hierarchical analysis of nested models in structural equation modeling (SEM). The original explicative model of safe work behavior was cross-validated except a few links. The results indicated that perceived safety climate affected safe work behavior in three paths: (a) Indirectly through the sequential influence of other mediating factors of perceived work pressure and perceived risk, (b) through the mediation of perceived barriers, and (c) direct influence on safe work behavior. Perceived hazard also affected safe work behavior through the mediation of perceived risk. The final model yielded acceptable fit indices (Normed Fit Index = 0.96, Comparative Fit Index = 0.97, Incremental Fit Index = 0.97, and Root Mean Square Error of Approximation = 0.05).

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[SC17-02]
Towards a Valid and Reliable Measurement of Safety Climate at Workplaces

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For more than two decades, safety researchers attempted to construct a reliable and valid safety climate scale, which resulted in at least 17 different safety climate scales published in peer-reviewed journals. As this lack of a consistent factor structure of safety climate was due, in part, to the exploratory factor analytic strategy which does not take into account inter-relationships among different constructs, Seo et al. (Journal of Safety Research, 2004, pp. 427-445) used the confirmatory factor analytic approach in developing the SSCS (Seo Safety Climate Scale)-SF (short form) where associations were allowed

among management commitment to safety, supervisor safety support, coworker safety support, employee participation, and competence level. The SSCS is widely used in more than ten different countries, including Australia, Belgium, Canada, China, India, New Zealand, Peru, Turkey, UK, and USA. However, because SSCS was validated only in US grain industry in published reports, it would be necessary to cross-validate the scale in another industry. This study tested robustness of SSCS using confirmatory factor analysis in a service industry that performs leak repairs, hot taps, valve repairs, and the like. Data were collected from 699 employees in 2007 from a US based company. The confirmatory factor model fit the data very well (Normed Fit Index = 0.99, Comparative Fit Index = 0.99, Incremental Fit Index = 0.99, Goodness of Fit Index = 0.93, Standardized Root Mean Square Residual = 0.033, and Root Mean Square Error of Approximation = 0.036). The findings affirmed that management commitment to safety and supervisor safety support are the two core dimensions that affect other dimensions of safety climate. Also, SSCS score was associated with workers' compliance with safety rules and experience of injuries and near-misses.

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[SC17-03]
Developing an Australian Research Centre for Occupational Health and Safety: Local Knowledge, National Impact and Global Benefit

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The *WorkCover New South Wales Research Centre of Excellence* (WRCE) was first established in 2004 as a joint venture between WorkCover New South Wales (NSW) and the University of Newcastle in Australia. The centre's main goal is to undertake expert research projects and provide research training to minimise and prevent workplace injury and diseases, as well as ensuring that high quality education and training opportunities in injury prevention, management and rehabilitation are available. Establishing mechanisms for achieving 'best practice' in occupational health and safety, injury management and rehabilitation are also high priorities. Current projects include local initiatives such as: Pathways for facilitating effective return to work, Safety of the ageing workforce, Safety interventions to prevent falls from heights, as well as the Provision of quality assurance to, and academic management of, the WorkCover NSW Assist Applied Research grant scheme. International projects have included a contracted review of the current International Labour Organization (ILO) chemical conventions and its associated recommendations. With this important research, the WRCE is forging ahead with clear and practical initiatives to improve the occupational health and safety of workers, both in Australia and around the world.

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[SC17-04]
Safety and Health at Work in Garments Factories: Bangladesh Perspective

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Socioeconomic development cannot be achieved without addressing occupational safety and health. The right of safe and healthy work environment falls far short in Bangladesh. In 2005, there were 141 deaths, 1578 injuries and 31 rape cases in garments sector alone. Among them 121 deaths and 1150 injuries occurred due to accidents (Bangladesh Institute of Labor Studies, 2006). Garment industries have became one of the largest export earners in the country. About 75% of the total working forces are women. This study was conducted with the objectives to assess the environmental and hygienic condition of the workplace, health status of the workforce, to analyze the risk of occupational hazards and to provide policy guidelines to planners and policy makers. The study was conducted April-June, 2007 in 30 randomly selected export oriented garment factories in and around capital city of Dhaka.

All the 30 factories were export oriented and private in nature with an average space 7,000 square feet. The major working forces are females with male-female ratio 1:2.80. The average working space is 30.8 square feet, which is far less than international standard (100 square feet). Only the first-aid medical facilities are available in 80% of the surveyed factories with no graduate physician. 70% of the factories are average to well-ventilated. 60% have hygienic toilets. 70% of the factories had no emergency escape. 100% had central water supply system with only 30% water filters. 5% of the workers are child labor. 30% of the workers had burning micturation, and 20% had a history of

jaundice during last one month. A strong correlation was found between history of injection and jaundice (P=0.035). There is absence of social compliance and factory rules and acts are not properly implemented. Immediate measures need to be taken to reduce the occupation hazards and maintain health.

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[SC17-05]
A Comparative on the Occupational Safety & Health Institution System of an Asian Countries

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Recently it is the manufacturing enterprise of our country is investing abroad nation. And It is becomes which will increase steadily abroad nation investment. Also the abroad nation investment of the Asian countries increases steadily and will be occuring problem of labor relationship and problem of occupational safety and health of enterprise. This is will causes effect decrease of abroad investment enterprise profit and decrease of our nation profit.
So it is necessary the study of the Asian countries labor relationship and occupational safety and health act.
This is study the Asian countries of occupational safety and health act.
The Asian countries is selected China, Vietnam, Indonesia, Malaysia, Thailand, Philippine and the selecting reason is the abroad nation investment order.
I will be able to think that this research will be able to attain the two objective.
First. The research of Asian countries of occupational safety and health act will be able to necessary for our enterprise of abroad investment profit and our nation profit from to disputes solution of multi type of asian investment countries.
Second. When we research legal or asian countries of occupational safety and health culture, the comparative study of asian countries of occupational safety and health act will be able to provide legal base data of occupational safety and health, it will be able to apply most efficiently.
Key Words : Abroad Investment, Occupational Safety and Health Culture, Disputes Solution, Legal Base Data, Research, Act

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[SC17-06]
Assessment of Worker's Perceptions of Occupational Safety and Health in Small Businesses

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Managements in Korean small businesses, frequently, have no resources to facilitate improvements of safety and health program at the workplaces. In this regard, small businesses having fewer than 50 employees account for 70 percent of all work related accident occurrences and 90 percent of increased accidents compared to the previous year in 2005.
One of the assisting programs to small sized companies is a financial loan for employers to invest in making safe dangerous equipment and hazardous work environment through replacing dangerous facilities and equipment, putting in safety devices, installing ventilation systems, modifying job process to be more ergonomics friendly, etc. The recipient of the financial loan achieved that their work related accident occurrences were decreased to 20.6 percentages compared to their before and after financial. Also, a cost-benefit analysis revealed that the loan project created 6.34 times benefit from the financial program.
It can be assumed that the workers at the companies having financial investment to improve the safety and health status may have benefits from the investment and change their safety and health perceptions on the workplaces.

The purpose of this research is to make an assessment of worker's perceptions of occupational safety and health in small companies between two groups, one had received financial grant for improving dangerous or hazardous working condition and the other had not received. The methodology and procedures applied to this study were designed to assess employees' safety and health perceptions between two groups of small-sized companies in order to understand the overall impact of safety assistance from government on the occupational safety and health of workers. This study is also to assess what types of safety assistances from outside of the small companies are sought by front line workers.

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[SC18] Chemical Safety

July 1, 12:15 - 13:15
Room: 336, COEX

Moderator:
Mi-Young Lee
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[SC18-01]
A Systematic Survey of Acute Pesticide Poisonings in Rural Areas China, 1991-2003

Chunfen Shao, Aiqing Yu, Zhijun Zhou

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Aims: To analyze and summarize the circumstances of acute pesticide poisonings (APPs) in rural areas China between 1991 and 2003. Methods: We collected the data concerning APPs in rural areas China from the papers and literatures published in the accredited Chinese journals, systematic analysis was conducted.Results: Of 50,805 poisoning cases founded, 14,442(28.4%) were occupational poisonings and 36,363 (71.6%) were non-occupational cases. There was obvious seasonal variation in the occupational pesticide poisoning while no significant difference in the non-occupational poisoning cases. Suicide attempts or intentional self-poisoning was the dominant poisoning reason, followed by accidental ingestion, inappropriate protection during loading, mixing, spraying pesticide, and accidental exposure. Organophosphate insecticides were the most frequent inducer of poisonings (74.1%), followed by carbamates (6.8%) and mixed formulations (6.2%). Besides, paraquat induced approximately 3,221 cases poisonings and 1,372 deaths in the period of 1991 and 2005 in rural areas China. Most of the individuals used it for suicide intentions (95.6%), among whom 64.1% were females; accidental ingestion and occupational exposure only accounted for 3.8% and 0.6% respectively of the total cases.
Conclusions: APPs are still a serious public health problem in China. Proper application and protection measures needed to be strengthened, so for the management of pesticides and the existing acute pesticide poisoning reporting system.

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[SC18-02]
Development of MSDS Editing Program

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The Ministry of Labor (MOL) revised the Industrial Safety and Health Act (ISHA) relating to the GHS in 2006 and the detailed notification was announced on Dec 12, 2006. The notification of globally harmonized system of classification and labeling of chemicals (GHS) has become effective since then and existing hazard communication system was allowed until Jun 30, 2008. To facilitate the implementation of GHS in Korea, we developed a program named Material Safety Data sheets (MSDS) Editing program. The program is composed of two modes Supervisor mode and workplace user mode. In the supervisor mode, MSDSs of chemicals can be made and revised through 7 modules, suchas chemical management, GHS hazard classification, unit control, standard phrase, MSDS editing, MSDS searching andMSDS revision control. In the workplace user mode, workplace users can search MSDSs of chemicals and make MSDSs of mixtures by combining MSDSs constructed by Korea Occupational Safety and Health Agency (KOSHA). At present, we supply the databases of 3,410 chemicals for hazard classifications and 1,148 for full MSDSs. We are constructing and updating MSDS databases and plan to offer MSDS according to GHS and hazard classification of more than 20,000 chemicalsuntil 2015. We are also developing the PC-based editing program for workers who use chemicals that were not included in web-based database. With PC based editing program, workplace users can make their new MSDSs by using existing chemical databases and standard phrases provided in the program, and also edit the MSDSs of mixtures by combining MSDSs already kept in workplace with downloaded MSDSs from KOSHA web site in their PC without web interface.

Key words : GHS, Korea, Editing program, PC based, mixture

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[SC18-03]
Platelet Dysfunction Can Be a Biomarker for Occupational Exposure to Neurotoxins

Jin-ho Chung

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Previous studies reported that the intracellular accumulation of 1-methyl-4-phenylpyridinium ion (MPP^+), the metabolite of neural toxin, MPTP (1-Methyl-4-phenyl-1,2,3,6-tetrahyropyridine), is well correlated with a rapid depletion of ATP level, which results in the loss of neuronal cell viability. Since ATP plays an important role in platelet physiology and function such as aggregation and cytotoxicity, we investigated the effect of MPP^+ on platelet aggregation and cytotoxicity. Treatment with MPP^+ to rat platelets inhibited agonist-induced platelet aggregation in dose-dependent manner. The inhibition of aggregation by MPP^+ was mediated by decreased ATP secretion and intracellular ATP contents as well in a dose dependent manner. Different from previous reports, MPP^+, however, did not affect intracellular levels of gluthathione and Ca^{2+}. The combined treatment with MPP^+ and 2-deoxyglucose, an ATP depleting agent, showed the additive effect in anti-aggregation. Consistent with these findings, inhibitory effects of MPP^+ on platelet aggregation was significantly enhanced by the treatment with 2-deoxyglucose. On the other hand, another neurotoxin, salsolinol, did not affect platelet aggregation by itself, but significantly increase agonist-induced aggregation in a concentration-dependent manner in human platelets. The salsolinol-induced platelet activation is mediated by 2-adrenergic receptor binding and resultant attenuation of cyclic AMP. The salsolinol-enhanced platelet aggregation could induce thrombosis in animal models which is similar to the events observed in Parkinson's diseases and alcoholism. In summary, each neurotoxin attenuates or enhances platelet aggregation induced by agonists mediated through different mechanism. All these dysfunctions in platelets could be used as a biomarker to predict cellular toxicity by neurotoxins in occupationally exposed workers.

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[SC18-04]
Examination System of Hazard and Harmfulness on New Chemical Substance in Korea

Hae-Won Cho, Kab-Bae Kim, Joung-Kyu Kim, Hyeon-Young Kim

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Examination system of hazard and harmfulness on new chemical substances in Korea is to protect worker's health from new chemical substances. New chemical substances imported or manufactured in Korea have to be reported to the Ministry of Labor by the industrial safety and health act. The number of new chemical substances which has been reported to the Ministry of Labor until 2007 was 4,820 since the examination system of hazard and harmfulness on new chemical substances began in 1991. In 2007, the number of new chemical substances imported or manufactured in Korea was 547. Among them, 158 chemicals(28.9%) were reported from the manufacturing industry and 389 chemicals(71.7%) were reported from service sectors. The number of workers dealing with new chemical substances was 1,858 and the number of chemicals whose agents were not identified was 91(16.6%). The amount of new chemical substances distributed in 2007 was 6,808.2ton. New chemical substances classified into hazard or harmfulness were 135(24.7%). The majority of them, 77 chemicals(14.1%), were serious eye damage substances and skin irritation substances were 61, eye irritation substances were 20, skin sensitizer substances were 19 and acute toxicity substances were 25, respectively.

Key words:hazard and harmfulness on new chemical substances, serious eye damage

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[SC18-05]
Comparison of Two Aerial Dispersion Models for the Prediction of Chemical Release Associated with Maritime Accidents Near Coastal Areas

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The quantities of hazardous chemicals being produced, transported and utilized in Asia-Pacific countries is increasing at a rapid rate. In the event of an accidental or intentional release, these chemicals and mixtures of them can result in a major threat to human health, the environment and property. Considerable effort is being made in many countries to develop emergency response

capabilities to cope with such situations. Estimation of the magnitude and rate of movement of the resulting chemical plumes, under various scenarios, can help in preparing for appropriate emergency response. Two computer models for predicting the aerial dispersion from chemical releases were compared: the U.S. Environmental Protection Agency's (EPA) Aerial Location of Hazardous Atmospheres (ALOHA) model and the Release (modeling) Integrating Terrain Effects (RITE) emergency response model. A sector of the geographical area for which the model was developed, which most closely resembles the coastal, urban terrain of Singapore, was chosen to test the models. Two chemicals, chlorine and propane, were used to simulate accidental releases. The plume travel directions and maximum plume travel distances for Immediately Dangerous to Life and Health (IDLH) air concentration values from the source were predicted by the models. Significant differences were found between the models in the predicted chemical plume angles and in predicted maximum distances for IDLH air concentration levels. The maximum differences between the models in predicted angle were an average of 9.3 and 8.7 degrees for chlorine and propane, respectively. The differences between the models in predicted maximum distances from the event for IDLH air concentration levels were an average of 5 and 36 kilometers farther, for chlorine and propane, respectively, using the RITE model. Adapting the RITE model to the topography of land masses near Asian Pacific waterways could be very useful in planning for possible chemical release events.

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[SC19] General Safety / Social Security

July 1, 12:15 - 13:15
Room: 402, COEX

Moderator:
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Only Nature Endures, India

[SC19-01]
The Global Campaign on Challenge of Social Security and the Worker Safety

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It cannot be denied that the workers are the ultimate goal for development and also most effective tool for development of any country. Therefore modern working conditions for the welfare of the worker calls for the relatively new approach for improving health and protection of rights at the workplace against all type of exploitations. This Paper deals with challenges on social security this paper also analysis ordeal new approach toward eliminating the challenges of social security to open up access and monitoring initiatives by national States to extend exposure of social security. Lastly examines the relationship between health and employment and work-related factors among workers.

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[SC19-02]
The Regional Emergency Plan Requirement: Application of the Best Practices to the Brazilian Case

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The importance of emergency plans is clear whenever a catastrophic accident happens that requires efficient emergency procedures. Despite efficient risk management, in many cases catastrophic events cannot be avoided over the lifetimes of enterprises. Moreover, some of these are triggered by natural catastrophes such as hurricanes, landslides and earthquakes, other by terrorist attacks.

Catastrophic events are characterized by social and environmental damage and losses to industry. These kind of events are more frequent in some particular industries such as oil and gas, aeronautics and the nuclear sector. Therefore, safety management has had to take catastrophic events as being possible and implement strict procedures that have been improved following a history of accidents over the last number of decades.

International studies (Moraes et al 2004) reports claim that more than 500 million people were affected by natural catastrophes between 1970 and 2000 and that there are more than 200,000 deaths in workplaces every year. Therefore, emergency plans, which is a part of safety management, is not well applied in many cases.

In Brazil, there were catastrophic accidents previous year in the oil and gas industry resulting in the need to create emergency procedures, improve risk management and for increase precautions in new projects. The P-36 and Guanabara Bay accidents forced the Brazilian government to be much stricter in regard to safety and environment requirements, creating new laws for the oil and gas industry. Despite improvements following these accidents, the regional and national emergency plans were not evaluated and remain a critical point for the Brazilian safety system in relation to the oil and gas industry.

That paper will discuss the approaches used in different countries around the world in order to propose the best practices to be applied in a regional Brazilian emergency plan.

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[SC19-03]
Outcomes of Road Crashes among Commercial Motorcyclists in Ibadan North Local Government Area, Oyo State

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Riding of motorcycles for commercial purposes is becoming increasingly popular in Nigeria. The commercial riders are registered with the motorcyclists division of the Road Transporters union, however, most are self-taught, un-licensed and often have reckless riding habits. This study (which was part of a larger study on incidence of accidents among commercial motorcyclists) sought to determine the outcomes of road crashes among commercial motorcyclists in Ibadan North LGA, Oyo state.
A cross-sectional survey was conducted using a multi-stage sampling technique and a semi-structured questionnaire administered to the respondents.
A total of 185 respondents (all men); with a mean age of 34.2 (± 8.8) years were interviewed. Majority, 70 (37.8%) reported that they taught themselves how to ride a motorcycle and 124 (67.4%) had been riding for commercial purposes for less than 3 years. On the average, the riders worked for 6.0 (S.D ± 1.04) days per week. Thirty-one (16.8%) had been involved in an accident since they commenced commercial riding; 22 (71.0%) of whom sustained injuries following these crashes. The commonest site of injury was the lower limb and the commonest types of injury sustained were bruises/abrasions 15 (68.2%). Twenty-one (67.7%) were unable to return to work immediately after the accident occurred and the median number of days of work lost was 14 (range = 1 – 150) days. Six (19.4%) riders were admitted; for a minimum of 14 days and a maximum of 90 days and one respondent suffered a permanent disability following the accident.

The study showed that road crashes lead to a significant number of days of work lost by the commercial riders. Concerted efforts must be put in place by the leadership of the commercial motorcyclists associations in conjunction with other road safety stakeholders to ensure the safety of commercial riders in their chosen occupations.

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[SC19-04]
Trends in HIV/AIDS-Related Perception among Peer Educators After an Educational Intervention among Artisans in Ibadan, Nigeria

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Objective: A basic level of knowledge about HIV/AIDS could go a long way in curbing the spread of this disease among the general population. This is due to the fact that many artisans work on the outdoors all day, have access to many customers per day and have a steady flow of disposable income because of the nature of their jobs.

Methods: A baseline cross-sectional survey of artisans in Ibadan was carried out with the use of interviewer-administered questionnaires. The questions addressed issues related to HIV infection, its mode of transmission, stigma and management of AIDS patients. Twenty-three peer-educators were subsequently recruited and trained over a 3- day period.

Results: A total of 23 artisans out of the 28 that had been initially trained as peer-educators were surveyed. They were all males with age ranging from 18 to 49 years, mean 26.2 ± 6.8. Three respondents (8%) had no record of having spoken with at least one of their colleagues about HIV in the past 6 months. The rest had counseled an average of persons. Eleven (45%) of those counseled had agreed to seek access to Voluntary Counseling and Testing (VCT) services available in the local health center. Knowledge of peer educators about HIV and AIDS had

increased from a mean of 6.5 +/- 2.5 to 7.4 +/- 1.5. Fifteen peer educators (60%) said they would "move away" from identified HIV-positive persons in public places. There was a statistically significant association between the knowledge of HIV and the number of persons the peer educators had counseled.

Conclusion: Knowledge about HIV was generally poor among the peer educators despite the educational intervention. Educational intervention among the peer educators should be more detailed with short term evaluation systems built into the process to assess the impact of their work.

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[SC19-05]
Risk-Based Inspection of Refinery Units : A Practical Application

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Recently, regulatory bodies quite often encourage to adopt risk-based inspection(RBI) and management programs because they can enhance safety simultaneously with deregulation in Korea. FBI is an integrated methodology that factors risk into inspection and maintenance decision making. This paper describes an example of how to use known risk assessment codes (API 580, API 581 BRD) to address such safety analysis requirements for risk management in the refining industry. specifically, this paper reports the methodology and the results of application to the refinery units using the RBI program, The results of the risk and reliability assessment using RBI program are useful in determining whether the detected defects are tolerable or required to be repaired. The subsequent decisions are to manage the future inspection, repair and maintenance planning in the risk reduction control.

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[SC20] Occupational Safety and Health Management System / General Health / Construction Safety / Ergonomics

July 1, 12:15 - 13:15
Room: 403, COEX

Moderator:
Ted Vandevis
Electrical & Utilities Safety Association, Canada

[SC20-01]
The Minex Award as a Reference to the Brazilian Mining Occupational Health and Safety Management System

Dorival Barreiros

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It was studied the National Minerals Industry Excellence Awards for Safety and Health – MINEX Award, which has been taking place annually by the Minerals Council of Australia as part of its safety and health leadership program which aims to eliminate industries fatalities, injuries and diseases.

The MINEX award is conceived from a systemic point of view, which places the occupational health and safety management effectiveness as an interaction from the best practices of the following categories: leadership, safety and health management, people, information and analysis, safety and health process and performance.

The goal of this study was to verify how Brazilian mining companies identify themselves with the best practices suggested in the categories and items of the Minex award in order to satisfy their occupational health and safety necessities.

A survey was conducted among the biggest mining companies in Brazil, in order to identify the possibilities of the MINEX award as a prospective model to be used by the Brazilian mining companies.

The results showed that the Brazilian mining companies have among their practices, initiatives analogous to the best practices suggested in the MINEX award model, but it was identified that they lack strength in their application offering wide possibilities to improvement. Also, the companies placed high importance to the MINEX award best practices as a reference to be used by mining companies in Brazil to model their occupational health and safety system.

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[SC20-02]
Ergo Analysis of the Urban Bus Driver From the City of Recife, PE, Brazil

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Around the world people depend on public transport for moving around cities. In Brazil it is estimated that only in the city of São Paulo around nine million people per day commute from their homes to their work. Already in the city of Recife, PE, this percentage has reached one and a half million passengers making 24 thousand trips per day. The drivers of urban buses are key actors in the full operation of the transport system, where every person unquestionably gives their life to these professionals. Despite the fact that the occupation of the bus driver is covered by law, they still suffer physical and cognitive overload which affects their ability to do the work. The survey aimed to carry out an analysis, focusing on ergonomics, of the work of bus drivers for a large company in the metropolitan area of Recife, PE, Brazil. The focus was on physical and environmental conditions, and the constraints faced by drivers such as: traffic chaos, the insecurity of urban streets, vibration, noise, temperature, organizational pressures, as well as the grave issue of urban violence. The sample was composed of 100 male drivers, aged between 25 to 64 years old, randomly divided into five groups according to the mileage of the journey they made. All the drivers answered a questionnaire adapted from MORAES (2002) "Method of Analysis System HUMAN - TASK - MACHINE" and applied to the scale of discomfort adapted from IIDA (2000), and using the methods of RULA and OWAS. Our results with this OWAS method demonstrated that 58% of the drivers maintain a sitting position in which a rotation of the torso is necessary in order to improve the working conditions of these professionals.

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[SC20-03]
Integration in School and the Correlation with Ergonomics in the School Environment

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Subject study has been carried out in two schools in Rome, one primary school, where a mentally retarded child is present, and one junior high school.
Objective of this project is the analysis of the ergonomics of the school environment.
In the primary school a secondary objective is to verify the degree of integration within the children and the hypothetical reciprocal relations of environment and socializing, either irrespective of the disability and in comparison to the disability.
In the junior high school a secondary objective is to check the children's needs and safety perception with respect to school environment.
The first step has been the measurement of the dimensional and structural features of the classrooms considered, their furniture and work-posts.
Pictures and videos have been shot so as to have a deep analysis of the ergonomic level of the work-posts and, at the same time, an inquiry to understand the needs of the students with respect to the environment "classroom", the work-posts and didactical tools utilized, by means of a multiple answers questionnaire, drawing, and the implementation of the shared design method.
Applying with the young users the creative sharing design method it have been produced the "diagnosis paper", where the problems and the criticalities relevant to the wellbeing and healthiness of the users of the school environment have been listed.
The data obtained have been then the subject of an exact and deep analytical and statistical examination carried on by the multi-discipline work group.

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[SC20-04]
A Study on the Activation Method of Safety Education Connected with Hand on Experience in Construction Field

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The problems of safety and health is a significant issue in the whole indurstries.
Many discussion, research data, and policy suggestions have been made to solve this problem, and a factor that is given a great deal of weight on these data among concrete

alternatives is education.
This study targets the construction field among the whole industries and focuses upon the case of Construction Safety Hands-on education Center being operated by KOSHA. In this study, the following problems and the solutions are suggested to maximize the effect of hand-on safety education in connection with safety education in the construction field:
First, hand-on experience program is required to be developed and improved in consideration of processes by field and characteristics by subjects of participation.
Second, participation by laborers is low among subjects of participation.
As alternatives to this situation, both indirect method of continuous P.R. and enlightenment of this matter and direct method of strong directions to prime contractor's behavior through cooperation by the Ministry of Labor in supervision are required to be executed at the same time
Third, the enterprises' sense of participation is low due to self-directed participation.
As an alternative to this situation, legal and institutional instrument is necessary to activate construction safety hand-on education.
Fourth, the quality problem of hand-on education is required to be solved as the number of subjects of education is increased,
From a long-term point of view, a sufficient number of instructors shall be secured and at the same time well-organized continuing education program suited to the trainees' level shall be newly established in order to get high educational effect and systematically cultivate trainees.
Fifth, the current outdoor hand-on educational facilities shall be converted into indoor ones. All-weather educational facilities shall be prepared without being influence by weather conditions

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[SC20-05]
Musculoskeletal Disorder Symptom Features and Control Strategies in Korean Hospital Workers

Jung-Keun Park[1], Day-Sung Kim[1], Eun-A Kim[1], Kyung-Beom Seo[1], Shin-Goo Park[2], Dal-Young Jung[2]

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To examine features of association between sets of musculoskeletal disorder (MSD) symptoms and factors, and then to accordingly suggest controls of MSD symptoms identified, a questionnaire study was conducted in Korean hospital workers. A questionnaire survey was undertaken in a university hospital, Gyung-In region, in September last year. The data were used to get descriptive statistics and to test three hypotheses with respect to 3 factors (job/occupation, task/activity and psychosocial factors).
A total of 1,091 workers were finally determined for data analyses. Among them, male and female workers were 23.7%, 76.3% with average ages of 32.5, 31.6 years, respectively. Prevalence rate of MSD symptoms for the whole body was 72% and, among six body parts, the highest was 49% for the shoulders. The symptoms were significantly different by job/occupation and task/activity factors across body parts whereas they were significantly different by job stress factors in only certain body parts, depending on gender. In the logistic regression analyses performed for MSD symptoms by body part and each of 3 factors, odds ratio values varied, ranging from 0.7 to 3.3. The controls for reducing the symptoms were discussed.
Conclusively, the study results show that the MSD symptoms can remarkably vary by each of the 3 factors and, in particular, can be highly differentiated by the task/activity factor. This study suggests that MSD symptom features be examined by using various factors and then higher differential factors be primarily utilized in the control of such symptoms.

Key words: Musculoskeletal disorder symptoms, Hospital worker, Job/ occupational factor, Task/activity factor, Psychosocial factor

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Wednesday, July 2

XVIII World Congress on Safety and Health at Work

Global Forum for Prevention

Safety and health at work: A societal responsibility

Symposia

Symposia

[SY33] Gender Mainstreaming and OSH

July 2, 09:00~11:00
Room: 320, COEX

Moderator: **Sameera Maziad Al-Tuwaijri**, ILO

[SY33-01]
Realizing the Right of Women to Safe Work - Building Gender Equality into OSH Governance

Mary Cornish

ILO

Globally, women's paid and unpaid work is a hazardous occupation. Women workers suffer widespread work-related ill health and lack of safety and well-being. Securing women's right to occupational safety and health (OSH) is part of the world's commitment to gender equality and decent work for all.[2] Yet women are often denied that right because they do "women's work" and because of gendered and biological differences, stereotypes and prejudices which structure their life, work experiences and economic opportunities. Women and men are different and so is their work - performed in sex-segregated work ghettos in many diverse locations and circumstances including homes, communities, offices, factories, care facilities, farms and streets. The ILO measures "decent work" as work which is available, freely chosen, productive, sustainable, equitable, secure and dignified. This includes the right to safe work. On these criteria, the number of women internationally who are engaged in "decent work" lags far behind that of the world's men. Labor markets globally continue to deliver vastly different outcomes to men and women workers. With labor women's main asset and women facing systemic barriers in access to resources, rights and representation, two thirds of the world's poor are women.[3]

There is an increasing recognition of the gendered nature of occupational accidents, illnesses, violence and harassment and the links to the systemic gender discrimination and inequality arising from the gendered construction of women's labour in the family, in society and in other workplaces. Women's greater home and community responsibilities; reproductive role, and dominance in low or unpaid, low-skilled, part-time and precarious work results in their systemic and discriminatory exclusion from "decent work" with OSH protections.[4] Such exclusion also fuels again the many other inequalities they face. While some progress has been made, OSH governance mechanisms often fail to differentiate between the protection of women and men's work leaving women to work in conditions which are unsafe and unhealthy. Deep seated gender prejudices and other constraints also hinder effective actions.[5] The challenge for the OSH sector is to transform its governance so that, working with other equality seekers, it can create and sustain the conditions which will ensure that women workers can be both physically and psychologically as safe as male workers.

This Concept Note has been prepared to stimulate discussion at the 2008 XVIII World Congress on Occupational Safety and Health where decision-makers, safety and health professionals, employers' and workers' representatives and social security experts are gathering to work on realizing the promise of OSH and gender equality rights and standards. Using a human rights-based gender mainstreaming analysis (HRBA), this Note provides a background review of some key issues, lessons learned and some promising pathways for understanding how to reduce gender-specific risks and secure safety and health for the diverse forms of women's work.

2 See ILO: A Fair Globalization: the Role of the ILO, Report of the Director General on the World Commission on the Social Dimension of Globalization, International Labour Conference, 92nd Session, Geneva, 2004 and ILO: "Decent work - the heart of social progress", online at http://www.ilo.org/public/english/decent.htm>. and C187 Promotional Framework for Occupational Safety and Health Convention, 2006, see http://www.ilo.org/ilolex/cgi-lex/convde.pl?C187.

3 Equality at Work: Tackling the Challenges, Global Report under the Follow up to the ILO Declaration on Fundamental Principles and Rights at Work, International Labour Office,2007 and ILO: Global Employment Trends for Women, March, 2008, International Labour Office, Geneva.

14"Hans-Horst Konkolewsky, "Gender Issues and Diversity in Occupational Health and Safety", Presentation, First Conference of Director Generals, Dublin, April 18-20, 2004, European Agency for Safety and Health at Work".

5 ILO: Global Employment Trends for Women, *op.cit.*, and Equality at Work: Tackling the Challenges, *supra*

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[SY34] Social Protection and Migrant Workers

July 2, 09:00~11:00
Room: 103, COEX

Moderator and Chairperson:
Piyasiri Wickramasekara, ILO
International Migration Programme

[SY34-01]
Social Protection in Health and Migrant Workers

Xenia Scheil - Adlung

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Recent studies suggest that migrants of poor sending countries are more likely to suffer from diseases like HIV/AIDS, Hepatitis, TB and malaria. Further, migrants are more vulnerable to ill health due to extreme working situations where migrants' work is characterized by exploitation, lack of legal protection, exclusion and related physical and psychological distress. Also, the socio-economic background often described by high poverty and low skills supports the assumption that migrants' ill health might lead to catastrophic events.

Against this background, there is rising concern about gaps in social health protection of migrant workers: While recent and long-term trends show, that globally the number of migrant workers is significantly increasing, related policies in social health protection lag behind or are even fully absent. As a result, the majority of migrants and their families are excluded from coverage of e.g. social health insurance or national health services in the recipient countries and have no access to health services in case of sickness. This has severe impacts on not only on the health and poverty of migrants and their families, but also the economic and social development of countries receiving migrants given the effects on economic growth, productivity and eventually social instability.

How can countries achieve a healthy migrant workforce while improving economic growth and productivity? What are the most efficient strategies and policies to address this crisis of the global migrant workforce? These questions will be tackled in this presentation.

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[SY34-02]
Promoting Occupational Safety and Health for Migrant Workers

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Occupational injuries, diseases and deaths have a negative impact on productivity of the enterprise and are therefore a core business issue for employers. It is therefore incumbent upon stakeholders including employers and their organizations to work together to promote occupational safety and health as part of national economic and social agenda. This approach is consistent with the provisions of the ILO Promotional Framework Convention N° 187 on Occupational Safety and Health.

The protection of migrant workers is part of the overall protection of all workers against injuries, diseases and deaths related to employment. ILO instruments do provide for equality of opportunity and treatment for migrant workers with nationals with regard to conditions of work, such as working hours, holidays, occupational safety and health, social security measures, welfare facilities and benefits provided in connection with employment. However when it comes to occupational safety and health , special emphasis should be given to migrant workers because of their vulnerabilities related to their specific working conditions and other linguistic and cultural difficulties that they face.

This presentation outlines some of the specific measures that should be taken by employers, workers organizations and bilateral agreements to promote the occupational safety and health of migrant workers. Although there should be no tolerance when it comes to trafficking and other inhuman exploitation of migrant workers, it is important that an advisory approach through training be adopted to improve the working conditions of migrant workers in sectors such as agriculture, mining and construction industries. Employers should take special measures to ensure either through language training that migrant workers fully understand instructions, warnings, symbols and other signs related to safety so as not only to protect themselves but also their co-workers from disease, injuries and death. Buy-in should be sought from the migrants by appointing migrant representatives in occupational safety and health committees. In cases where social security contributions do not permit entitlements to benefits, bilateral and multilateral agreements should be used to resolve this.

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[SY34-03]
Social Protection of Migrant Workers

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INTRODUCTION

Recently and increasingly, migration issues are becoming of a main concern for almost all States, employers' organisations, trade unions, people, civil society, institutions, regional and internationla organisations.

This growing interest is related to the consequences of « regular and irregular » migration concerns, in particular those of migrant workers, on social and economic development of both host and origin countries.

The components related to social, civil, cultural, economical and political rights of migrant workers deserve a sound analysis, emerging from part to part in the world, to restaure full dignity of migrant workers.

It is our real pleasure to share thoughts with you on migration issues, and in particular on social protection of migrant workers.

An overview of the migration phenomenon, clear definitions of the concepts related to the issue should be provided, such as migrant workers, social security, a complete review of the social protection challenges faced by migrant workers, and placing migrant workers contribution in the globalized economy should be considered before discussing axes for providing adequate social protection to migrant workers.

THE MIGRATION PHENOMENON

Since the dawn of history, emigration has been part of the historical process. People leave their homelands in search for a better life, and to flee persecutions, war and disasters.

However, this phenomenon has gained a more significant global dimension that has put it on the agenda of today's world. Migration is characterized by its cross-cutting nature, the complexity of which everyone recognizes.

The importance of migration today is revealed by the estimated number of migrants, between 180 and 190 million people, of whom 90 million are considered as migrant workers.

For the International Labour Organization (ILO), 10 to 15% of all migrant workers around the world, ie 9 to 13.5 million people, are in an "irregular" situation.

But what do we understand by migrant worker and social security?

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[SY34-04]
Social Protection for Migrant Workers

Gerhard Albracht

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In 2004, the International Labour Conference(ILO) agreed to a Multilateral Framework for Migrant Workers in a global Economy.Among other things this promotes Decent Work for migrant workers and improving labour inspection and creation of channels for migrant workers to lodge complaints and seek remedy withour intimidation
If all the the 175 million international migrants recorded by year 2000 were to form a single political entity, they would represent the world's fifth most populous country.Some 86 million migrants and refugees worldwide are economically active(ILO Report).
Migrant workers are often concentrated in low-skilled occupations, usually in jobs requiring long or irregular hours of work or subject to seasonal lay-off and bad working conditions.They work mainly in agriculture, construction and services, which are characterized by a large number of small producers, low technology and high firm turnover.

Work kills more people than wars. Some 5000 a day, one person every 15 seconds, die from occupational accidents and diseases.Many of them are migrant workers.
In November 2006, the ILO Governing Body decided to strengthen labour inspection as a key component of Decent Work and DWCPs, emphasizing the links between labour inspection , poverty reduction and sustainable development.The GB proposed a new series of measures designed to "reinvigorate, modernise and strengthen labour inspectorates worldwide".
Measures the ILO has suggested in the strategy paper include the development of ethical and professional codes of conduct, tripartite labour inspection audits to assist governments identify and address weaknesses, global inspection principles, hands on tools and targeted training.

In Partnership with IALI the ILO has the opportunity to achieve the goal for every country that "an efficient and adequately resourced labour inspection system makes a significant contribution to economic development, social cohesion and good governance" • • •

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[SY35] Advanced Practice of Ergonomics for Occupational Safety and Health in the Shipbuilding Industry

July 2, 09:00~11:00
Room: 203, COEX

Chairperson:
Kwan Suk Lee, Hongik University, Korea

[SY35-01]
KOSHA's Role in Korean Shipbuilding Industry

Jeong-Yeol Ban, Guy Sun Cho

KOSHA, Korea

It was Chosun Heavy Industry Co., Ltd.(later, the name changed to Hanjin Heavy Industries & construction Co., Ltd.) which was established in 1937 and started Korea's shipbuilding industry originally. In 1967, the foundation of Hyundai Heavy Industries Co., Ltd. empowered Korea to be one of the leading country in shipbuilding field. Since 1990s, the industry has been brisk with the increased commercial traffic across the border, the improvement of "double hull construction" , and so on.

Currently, Korea occupies the number one position with ship production and the amount of orders received in the global ship market and this calls for suitable safety & health management system since the level of hazard is getting higher with increasing productivity and expanding blocks in the field.

In this treatise, I would like to discuss Korea's current state of shipbuilding industry, safety & health management system in operation and the considerable improvements.

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[SY35-02]
Challengs, Advances and Opportunities with Shipyard OHS in Korea (The Owners Perspective)

Jason Mc Carthy
Teekay- The Marine Midstream Company, Canada

[SY35-03]
Introduction of HEMP, Ergonomic Management Program in Hyundai Heavy Industries

Tae-Bum Lee[1], Jun-Youb Lee[2], Hyun-Soo Seo[2]

[1]Hyundai Heavy Industries Co. Ltd., [2]Safety&Health Department, Hyundai Heavy Industries Co., Ltd., Korea

With the increase in prevalence of musculoskeletal disorders in industrialized countries, Work related Musculoskeletal Disorders(WMSDs) have become a main issue in areas of occupational diseases prevention. Generally, WMSDs are providing a great deal of concern about health care policy and financial burden to both the employees and the industry because they generate significant disability of workers, symptoms, time loss from work, reduced productivity and increasing worker compensation cost. In ship-building industries, most of the tasks at the workplaces are exposed to ergonomic risk factors such as awkward postures, forceful exertions, pressure points and vibration, so prevalence of WMSDs in ship-building industries is much higher than that in other industries.

In this paper, we introduce preventive management program for reducing WMSDs in Hyundai Heavy Industries, HEMP(HHI Ergonomics Management Program), which consists of organizational management, education, ergonomics management, medical treatment and effectiveness analysis/evaluation and explain how to operate this program for preventing WMSDs. Also, our computerized system of implementing HEMP which makes it possible to monitor and control all the activities related to the program in real time is described.

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[SY35-04]
DSME Major Safety Culture Change, Safety Captain & Injury and Incident Free Program Development

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DSME major Safety Culture change, Safety Captain & Incident and Injury Free program development, its affects on the overall Safety performance, and work force attitude changes to create a safer work place for all involved
Incident and Injury Free& Safety Captain program brief explanation, then address changes in the DSME Yard during 8 consecutive Chevron projects over a 10 year period with a positive 100% improvement over the duration of this period

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[SY35-05]
A Case of Ergonomic TFT Operation in Hyundai Samho Heavy Industries Co., Ltd

Soon Young Oh

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The Korean Shipbuilding Industry held 4% of the gross domestic produce of Korea in 2007. The Industry has a primary role in supporting the national economy, although it is recognized as a high risk industry. Musculoskeletal disorders(MSDs) have been identified as a significant risk to the workforce there are physical demands on manpower due to the limitations of automation. In response to these physical demands an Ergonomic Task force Team(ETFT) was convened in 2005 to identify countermeasures which could be implemented to protect workers by removing manual handling requirements or reducing the risks.

1. The ETFT consists of general manager of the construction department, supporting department, HSE department, doctor, ergonomist, director of HSE as the leader. The team produced a plan which was incorporated into the management activities of the shipyard focusing on prevention of MSDs and efficient control of existing conditions.
2. Analysis of areas within the shipyard with high frequency rates for MSDs identified processes and working conditions to be targeted. General Managers from these areas were invited to the ETFT to assist in maximizing its operating efficiency.
3. Cases identified as potential situations for improvement are analyzed by an ergonomist and corrective action plans developed. The general manager of the department implements the action plan and presents the case, including the effects of the action plan to the ETFT every month.
4. An example of success has been the organization of a vibration prevention task force team, within the ETFT. Vibration at 4" and 7" pedestal grinders has been reduced to 1.15 m/s, 2.69 m/s respectively.

The ETFT has been in operation for three years. The occurrence of MSDs within the shipyard over the previous twelve months has reduced by 75% over the previous year. Expenses claimed against MSDs have reduced by 24.1 billion won.

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[SY35-06]
Digital Human Modeling & Simulation for Reducing Ergonomic Hazards in the Shipbuilding Industry

Seong Rok Chang

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In these days, work-related musculoskeletal disorders(WMSDs) is one of the issues in the shipbuilding industry. As the number of injured workers and demands for worker's compensation have rapidly increased, improvement of work conditions and environments to prevent ergonomic hazards have been more demanded. To reduce ergonomic hazards in the shipbuilding industry, simulation technique which showed it's ability of increasing the manufacturing productivity was applied, because simulation technique has the evaluation ability for a worker's danger level of production process. This study constructed digital human models of ship construction tasks using Digital Human Modeling & Simulation and evaluated human models' activities through Human Activity Analysis. The main objectives of this study are to evaluate postures of digital humans by RULA and to reduce ergonomic hazards in the shipbuilding industry. In this research, worker's attitude had modeled and worker's action has simulated. After the caution level was evaluated, we pointed out clues which had high workload. To reduce workload, we applied ergonomic principles for improving working conditions and environments. Improved working conditions and environments were simulated using human modeling and simulation and their workload were evaluated again.

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[SY35-07]
The Development Plan of Musculoskeletal Disorder(MSDs) Prevention Law & System in Korea

Dong-Kyung Lee

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The purposes of this research are to discuss and propose advanced work-related musculoskeletal disorders (WMSDs) prevention system in Korea in order to decrease the increasing number of patients suffering from musculoskeletal disorders. The musculoskeletal burden tasks and work related musculoskeletal symptoms (WMSDs) of Industrial workers were not well-known until 2003 when the Occupational Safety & Health Law was registered a business of proprietor duty in preventing work-related MSDs of workers in Korea. Since then it caused a being big issue in Korea. An early social concern was focused on the manufacturing industry just like auto and shipping industry, etc. in manufacturing sectors. Nowadays it is spreading out to non-manufacturing fields gradually. Therefore, we need to review WMSD prevention Law and System in Korea to reduce WMSDs effectively and systematically. In this study, Korea WMSD laws and these recent problems in Korea are introduced and proposed the advanced systems as discussion issues.
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[SY36] International Trend: National Strategy to Promote Occupational Safety and Health Research

July 2, 09:00~11:00
Room: 310, COEX

Co-Chairperson:
Shunichi Araki, National Institute of Occupational Safety and Health, Japan
Doo Yong Park, Occupational Safety and Health Research Institute, KOSHA

[SY36-01]
National Strategy to Promote Occupational Health and Safety Research in Japan

Shunichi Araki

National Institute of Occupational Safety and Health, Japan, Japan

In April 1, 2006, the National Institute of Industrial Health (NIIH) and the National Institute of Industrial Safety (NIIS) were amalgamated into a single, comprehensive research facility legislated as the Japan National Institute of Occupational Safety and Health (JNIOSH), a new independent administrative government institution.
At present, we have several important occupational safety and health issues to be solved in Japan. Firstly, serious industrial accidents such as fires, explosions, and the destruction of machines and buildings are taking place every day within industry, causing the death and injury of many workers. In 2006, the number of death due to industrial accidents amounted to 1,472 workers.
Secondly, hazardous work environments still exist in small to medium sized industries. Thirdly, the rapid development of an information-technology orientated society, the prolongation of life expectancy, and a low fertility rate have all resulted in dramatic changes in the health and working life of Japanese workers. As a result, death due to overwork (Karoshi) and suicide caused by socio-economic factors are now increasing within this country, sometimes at an alarming rate.
Furthermore, a rise in mesothelioma and lung cancer due to asbestos exposure in general environments external to industry has recently made headlines. Research for safety of industrial automated systems is promoted. Health effects of nanomaterials (carbon nanotubes, titanium(IV) oxide, fullerene etc.) begun to be used as electronics and clothes are greatly concerned.
All of these issues have ensured that preventive measures and equitable worker's compensation have become urgent social issues for the 21st century. In order to meet these new challenges and also to address traditional occupational health problems in Japan, we at JNIOSH are forging ahead with comprehensive and interdisciplinary studies from both an academic and technical perspective.
In this report, I intend to speak about: (1) History and structure of the JNIOSH, (2) National occupational health and safety promotion strategy, (3) Co-investigation of industrial accidents requested with the central government and local authorities, and (4) Activities of the International Center of the Institute. Also intramural activities of the nine research groups of industrial safety, health and environment in the Institute are reported.

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[SY36-02]
The National Occupational Research Agenda: A

Framework to Bring Research into Practice in the United States

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The National Institute for Occupational Safety and Health (NIOSH) and stakeholders in the United States are working together in the second decade of the National Occupational Research Agenda (NORA). Since 1996, NORA has served as a framework to guide occupational safety and health research, not only for NIOSH but for the entire occupational safety and health community in the United States. The second decade of NORA was initiated in April, 2006 as a sector-based approach, which includes all employers, all workers and all workplaces (www.cdc.gov/niosh/nora). NIOSH and its partners have formed eight Sector Councils, including members from industry, labor, academia, and government. Currently each Sector Council is drafting strategic and sub sector-based research goals, objectives, and action plans. These agendas will provide guidance to the entire occupational safety and health community for moving research to practice in workplaces. In addition, a Cross-sector Research Council has been formed to identify opportunities for common research (for example musculoskeletal disorders) across sectors. Global Collaborations is an important cross-cutting theme for all Sectors, since in our global village, the sharing of solutions to common problems can increase the health and safety of workers on all continents. NIOSH is the steward of NORA and facilitates the work of the Sector Councils. Sector definitions follow the North American Industry Classification System (NAICS), which has replaced the U.S. Standard Industrial Classification (SIC) system. The 20 NAICS sectors were aggregated into eight Sector Council groupings according to the similarity of their occupational safety and health issues:
Agriculture, forestry, and fishing
Construction
Health care and social assistance
Manufacturing
Mining
Services
Transportation, warehousing, and utilities
Wholesale and retail trade

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[SY36-03]
Singapore's Research Strategy on OSH

Sweet Far Ho[1], Chia Sin Eng[2]

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Singapore research efforts are focused on enhancing safety and health at workplaces. Research projects are targeted towards identification and evaluation of health hazards, seeking cost-effective solutions in health risk monitoring and control and development of OSH standards. Research projects usually involved collaborating with tertiary institutions and the industry to ensure that the research will be relevant and practical. The presentation will include Singapore's ongoing contributions to the WHO Collaborating Centres' Network Work Plan for 2006 -2010, with examples on the projects which are successfully applied and put into practices at workplaces.

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[SY36-04]
Identification of Research and Transfer Knowledge Priorities in Occupational Health and Safety

Sergio Iavicoli[1], Bruna Maria Rondinone[2], Antonio Moccaldi[2]

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Far-reaching changes in the labour market are calling for the identification and systematic updating of research priorities and knowledge transfer related to occupational health and safety. This study, conducted by ISPESL in 2007 on the basis of an earlier one in 2000, sets out to assess new attitudes and tendencies, as compared with priority topics identified in the past. It outlines emerging areas which, according to the people interviewed, call for action as regards research and transfer of results.
The survey was based on a questionnaire mailed to a sample of 442 selected stakeholders in various areas of the OSH sector (universities, public and private research organizations, regional agencies for environmental prevention, local health offices, social partners, etc.). They were asked to rate by importance the 27 topics identified in the earlier study, using the Delphi method, and to identify any new priority related to emerging risks in the OSH sector.
Occupational Carcinogenesis and *Accidents at work* appear to be by far top priorities from the research

viewpoint as well as knowledge transfer. As to newly identified areas, top priority for research are the *risks associated with nanotechnologies and exposure to nanomaterials* which is instead at rank 11 for knowledge transfer.
Assessment of psychosocial and organizational risks is at rank 2 for research and at rank 1 for knowledge transfer. Also *migration and work* is an issue of great relevance.

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[SY36-05]
New OSH Strategy and Policy in the Legal and Management Aspects

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Republic of Korea has achieved a great economic growth and industrial developments during last three decades. Occupational health and safety problems have been considered as unavoidable side effects and have been given relatively little attentions for a long time until early in 1990s.

Recently it was seriously recognized that human safety and good health are essential for high quality of life. Also, as the severity and magnitude of occupational health and safety (OHS) problems are getting higher, it was realized that risks for OHS could be a barrier for sustainable economic growth. In addition, it has been expected that Korea would be suffered from lack of workforce due to low birth-rate and rapid aging in the near future. Thus, the protection of decent workforce from occupational injuries and illnesses emerged as an essential social goal.

Globalization and neo-liberalism that govern national economic policies and regulatory schemes all over the world in this century affect OHS systems in the both public and private sectors. For last 10 years after experience the IMF economic crisis in 1997, we faced dramatic changes in the various aspects of the political, socio-economic, and cultural environments. The field of OHS was not an exception. A high pressure on the de-regulations and privatization of the public services in the field of OHS under the logic of self-regulation has been persisted. In addition, de-polarization between the rich and the poor has been raised as an important social problem. Since the safety divide accelerates de-polarization, setting-up of the social safety systems was considered as a national agenda. In the middle of high pressure on the de-regulation and need for protection from high risks, OHS faced both challenges and crisis simultaneously.

Based on the occupational injury and illness statistics and the social and economic circumstantial changes, it has been suggested to develop a new OSH strategy and policy.

Brief on the circumstances and changes of the Korean OHS and discussions on the new strategy and policy to be explored will be introduced and some challenges of OHS researches will be addressed in this paper.

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[SY37] Social Security: Key Roles in Prevention and Workplace Health Promotion

July 2, 09:00~11:00
Room: 104/105, COEX

Chairperson and Moderator:
Hans-Horst Konkolewsky, ISSA

[SY37-01]
Social Security: Key Roles in Prevention and Workplace Health Promotion

Jens Schremmer

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Workers' health is a key factor for building sustainable social security systems in the future. In the context of globalization, demographic change and other socio-economic changes, human capital, high activity and labour force participation are indispensable for financing old-age pension, disability, unemployment, health care and other social security benefits. Workplace health promotion is an effective means of protecting and improving the health of people at the setting workplace with a view to enabling workers to nurture their human capital and remain active throughout an extended working life.

It is argued that, positively, the observed trend from a traditionally rather reactive role of social security towards a broader concept of a social security scheme that is also proactively investing in the prevention of risks and in health indicates that social security policies have increasingly realized the importance of health for ensuring innovative

and sustainable social security systems. As a result, an increase in the activity levels and the investment in health promotion by social security schemes can recently be observed. Many of these innovative health promotion activities have focussed on the setting workplace.

These increased workplace health promotion activities by various social security schemes have, however, also increased the need for, and the potential of, collaboration and partnerships between different health promotion actors at the setting workplace. Where such collaboration is lacking, inefficiencies, waste and frustration of key actors can be the unintended consequence. The comparative analysis of the experiences of different countries with a view to identifying good practice of innovative workplace health promotion partnership arrangements involving social security schemes is therefore of high value for maximising the impact of workplace health promotion activities.

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[SY37-02]
"Initiative Health and Work" A Successful Cooperation in Prevention between the German Social Accident and Health Insurance

Walter Eichendorf

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Promoting health in working life: this target and the complex demands of today's working environment call for cooperation. One example for a working cooperation is the Initiative for Health and Work ("Initiative Gesundheit und Arbeit", IGA). Four associations within the German statutory health and accident insurance system are involved: the Federal Association of Company Health Insurance Funds, the Federal Association of Local Health Insurance Funds, the Federation of Workers' Alternative Health Insurance Funds and German Social Accident Insurance. They work together on prevention and occupational health promotion.

IGA sees itself as a provider of stimuli for health insurance funds, accident insurance institutions, companies and other parties in workplace prevention. The initiative takes up topical issues and needs which are as yet not met. It makes existing methods and knowledge available for exploitation in the field, and develops prevention strategies.

Specific projects are conducted on four main areas:

- Prevention aims and objectives
- Changes in the sphere of work
- Organisation of healthy work
- Effectiveness of prevention

In addition, IGA promotes the exchange of information between experts from the various institutions.

Examples:

- IGA has developed a procedure for devising work-related prevention aims and objectives.
- Different companies drew up scenarios for the year 2020 to deal with the "ageing workforces".
- Another project dealing with the subject of "my next profession" focuses upon a successful change of occupation or activities (for occupations cannot be exercised to retirement age, despite comprehensive prevention measures).
- An IGA-survey of literature shows the effectiveness and benefit of workplace health promotion and prevention.
- IGA also maintains the German Network for Workplace Health Promotion, the DNBGF, the largest platform for the subject of workplace health promotion in Germany.

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[SY37-03]
Joint Project for Small-scale Workplace Health Management by Related Organizations

Won-Sik Kim

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The National Health Insurance Corporation (NHIC) has been striving to extend its role especially strengthening its health promotion and prevention activities.

Last year, the NHIC implemented a new health check-up scheme called "Health Check-ups by Life Cycle" and provided newly designed health check-up services to over 12.4 million people including 230,000 less-than-5-year-old infants and 440,000 people who were in their 40 and 66 years.

NHIC has also been providing follow-ups services for persons who showed abnormal check-up results that consist of various on-and-off-line health information, physical activity program for senior citizens, case management for the chronically ill with hypertension and diabetes, and so on.

In 2005, the NHIC launched for the first time a joint pilot program in collaboration with Korea Occupational Health and Safety Agency (KOSHA). It was a 3-year period project (2005-2007) intended to develop an ideal collective health promotion model for people at workplaces. The pilot program was targeted at workplaces with less than 50 employees where their employees' interest in health promotion was relatively low.

NHIC designated a hospital and had them provide the target workers with various health intervention program., while both the involved agencies were encouraging workers to join health check-up programs and choose a healthy life style. The hospital conducted such commissioned program activities as assessments of work environment and its feedback, sanitary inspections of workplaces, hazardous material management, clinical examination, treatments and medication, and other health promotion activities utilizing available community health resources.

The health intervention program showed that the workplace-based health promotion model yielded very favourable outcomes.

According to the research, the participating rate of health check-ups was increased up to 84% in 2006 from merely 38% in 2003, and also the workers' major health indicators such as blood pressure, blood sugar, obesity and health behaviours were improved very meaningfully.

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[SY37-04]
Disability Case Managers Making the Case for Work Health Promotion

Marc De Greef, Marthe Verjans

Prevent, Belgium

The goal of Disability Management is to prevent that long-standing health problems and/or disabilities lead to problems relating to employment participation and permanent exclusion. Disability Management focuses on the reintegration and job retention of these employees. The first cornerstone is the individual coaching of inactive employees. The second is setting up and implementing a reintegration policy at company level. For this purpose the Disability Management method introduces two key figures: the Disability Case Manager (DCM), who is responsible for the individual coaching of the employee during the reintegration process, and the Disability Manager (DM), who develops and supports the company reintegration policy. Both the reintegration process and the reintegration policy require a multidisciplinary approach.

The presentation will present the introduction process of both Disability Case Manager and Disability Manager on a company level in a country (Belgium) with no previous experience on the topic.

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[SY38] Risk Management a Failed Paradigm

July 2, 09:00~11:00
Room: 403, COEX

Chairperson:
Ciaran McAleenan, Expert Ease International, Ireland

[SY38-01]
Competence - A Leap of Faith

Philip Mcaleenan, Ciaran Mcaleenan

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Is there anything so elusive or thought provoking as defining competence? Start with this thought; "every worker is competent". In fact let us say that everyone is competent. We can explore definitions later, but it important to acknowledge this fact. Why would this be so when the debate up to now has been about taught competence? What of reasoning, integrity, honesty, creative thinking, visualising. Are not these natural attributes an essential element of competence?

From its conception a child has the ability and the instinct to survive. For that to happen effectively he needs to find nourishment, warmth, comfort and protection, which he gets from his mother. In those early days through to some months after its birth the child is totally dependent on his mother to provide for his needs, but there comes a time when the child starts to talk, walk and develop the skills needed to survive as an independent person. As the child grows the degree of dependence he has on his parents, his teachers and his mentors diminishes. The journey is one from total dependence to complete independence of thought and deed.

It is necessary to acknowledge some basic truths about competence. Is it possible that the natural instinct to survive is a core tenet of competence? If so then where individuals do not possess all the skills and resources needed to survive there is a level of dependence on others to provide assistance.
As the individuals' skills, knowledge and ability grow their level of competence grows to a point where they can perform fully in their chosen occupation with confidence. As this journey progresses the dependency on others will and must be allowed to diminish. Creating a false degree of dependency affects an individual's ability to achieve their full competence potential.

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[SY38-02]
A Paradigm Shift - An Applied Systems Thinking Approach to Health and Safety Management - An Abridged Paper

Rakesh Maharaj

ARMSA Consulting, United Kingdom

Interactive Planning (IP) is a management and organisational problem solving methodology founded on the fundamental principles of applied soft systems thinking (Ackoff, 1999). The philosophy that an organisation functions as a whole and cannot be divided into independent parts without loss of its essential properties or functions is a key principle of soft systems thinking. Therefore, improving the performance of parts of an organisational system through traditional occupational health and safety transformation techniques may not lead to overall improved performance. Espousing a holistic, systems approach is therefore essential to systematically embedding proactive occupational health and safety practices in all aspects of corporate culture, business decision making and commercial operations.
This paper describes the application of IP at a high hazard power generation company, and as its main objective, examines how an IP led occupational health and safety management transformation programme contributed to both business value and improved safety performance.

Included in the paper is a discussion on how transformation techniques such as consumer idealised designs and cooperative inquiry processes were used to identify health and safety, operational and organisational improvements. It also discusses how organisational and operational barriers such as a rapidly *changing workforce, complex communications structure* and *a diminishing guiding coalition* were recognised and overcome. In doing so, not only were improvements in occupational health and safety ownership and performance noted, but also improvements in operational efficiency and organisational effectiveness.

This paper concludes that high hazard organisations can maximise their competitive advantage and enjoy commercial gains by improving occupational health and safety management through an applied systems transformation programme, whilst enabling the company to deal more effectively with organisational and process demands. It adds to the growing body of research that challenges traditional belief that occupational health and safety management is an expensive regulatory compliance or loss control exercise.

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[SY38-03]
Encouraging Meaningful and Effective Consultation About Occupational Health and Safety (OHS) in the Construction Industry: A Recognition of Workforce Competence.

Ciaran McAleenan[1], Gerard Ayers[2]

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There is overall consensus that worker involvement via consultation is vital to OHS success. However, for consultation to be meaningful and effective in terms of OHS success, it is considered that issues such as trust, honesty, integrity, respect, support, commitment, sincerity and inclusiveness be recognised and implemented by all parties involved.

The construction industry is acknowledged as one of the most hazardous and dangerous industries in the world. The complex and fragmented structure and organisation of work that often occurs within the industry, tends to confound the development of any kind of social and positive learning and communicative culture; effecting an under-utilization of the knowledge and skill of workers. As well as failing to bring to fruition the full participation of workers in the management of health and safety, it is potentially one of the largest hidden costs an organisation may incur. It is also recognised that the level of

organisational maturity is a key component that has a profound affect on the overall culture of an organisation, and its subsequent safety culture, which in turn greatly affects and influences not only the application and implementation of the issues required for effective and meaningful consultation, but also mediates how an organisation manages and applies the knowledge and skill encapsulated within its workforce.

The attributes of knowledge and skill are often used to define workforce competence. If organisational competence is to be defined by the management and use of such intangible assets, it follows that construction companies should apply the issues required for effective and meaningful consultation in a mature, responsible, ethical and inclusiveness manner; so that consultation may continue to enhance levels of OHS in the construction industry, by fully utilizing the knowledge, skill and competence of the entire workforce.

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[SY38-04]
Risk Management Principles in Product Design

Steve Mcroberts

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Risk Management concepts are generally well understood as a means of identifying safety requirements in product development processes. This paper will expand on these concepts of risk management and outline an approach to enhance safety further by identifying key aspects of product functionality and user expectations into development. Consideration is given towards a robust methodology for deriving product essential performance, and the inclusion of state-of-the-art aspects for optimal product safety development.

Underwriters Laboratories Inc. (UL) is an independent, not-for-profit product safety testing and certification organization. Founded in 1894, UL has earned a reputation as a global leader in product safety standards development, testing and certification. UL's overall program of evaluating products for safety, harmonizing international standards, participating in U.S. national code development and educating consumers about product safety enhances the public's well-being.

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[SY39] Health Effects in the Agricultural Industry

July 2, 09:00~11:00
Room: 321, COEX

Chairperson:
Hyun Sul Lim, Dongguk University, Korea

[SY39-01]
Introduction of an Intervention Program for Agricultural Safety and Health in Korea

Yong Heo[1], Seung-Young Oh[2], Mi-Ok Sim[2], Bong-Hoon Lee[2], Kyung-Sook Lee[3], Kyung-Ran Kim[3], Hyo-Chul Kim[3]

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Agriculture has been known to be one of the most hazardous job in the world. Even though there is no independent governmental body fully responsible for management and control of agriculture-related accidents and illness in Korea, Rural Development Administration and Rural Resources Development Institute have launched an intervention program for promoting agricultural safety and health since 2006. Two task forces, the central supervisory committee and the local operation forces, are organized to operate the program. The governmental bodies are responsible for budget establishment, selection of target villages, inspection on progression of the program in the villages, and evaluation of achievement by the communities participated, and so on. The central supervisory committee, mostly composed of research scientists, medical or agricultural engineering staffs, and administrative personnel, is responsible for preparation of overall strategy and action plan, and supervision on resolution of problems encountered during progression of the program. The committee also provides technical assistance for monitoring work hazards or performing medical examinations for identification of agricultural-related illness. The local operation forces, which are led by medical doctors with occupational medicine specialty are established in 8 provinces. The local forces carry out the intervention program, in that they monitor the occupational hazards, examine health status of participant farmers, and they execute intervention programs to

enhance agricultural health and safety. Farmers empowered through getting education or training provided by the governmental bodies are performing walkthrough survey of all participant farms' work environment. Thereafter, agricultural safety and health problems exposed are analyzed by the all participant entities including the local operation forces and the empowered farmers. Finally, various intervention actions for improving farmers' health and safety are implemented. In conclusion, the intervention program is designed to reduce work-related accidents and illness in agricultural society, and to be proceeded through coalition among all the parties involved.

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[SY39-02]
Farmers Health Status: Results of 2006 Survey on the Agricultural Safety Model Villages and Basic Research on the Long-term-farmers Health Evaluation Project

Young-Jun Kwon[1], Hyung-Jun Im[2], Kyung-Suk Lee[3], Kyung-Ran Kim[3]

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Object : Rural Development Administration in South Korea has been conducting a 6-year agricultural safety model project since 2006. The survey was conducted to evaluate farmers' health status and build basic data on this.
Materials & Method : This survey was conducted to 1,233 farmers in 18 villages in 8 provinces by interview with questionnaires and health examination.
Results : The results by questionnaires are summarized as follows. The average age of recipients are 59.9. The results of survey on alcohol by AUDIT questionnaire show 35.7% are abnormal, and 70% of male recipients have alcohol-dependence. The results of survey on medical history show knee arthritis ranks 1st by 28.8%, hypertension 22.1%, periodontal disease 20.3%, lumbar disease 19.4%, and shoulder arthritis 13.5%. And 75.5% of the recipients have visited to medical institutions for the last year. The results of survey on stress level by PWI-SF show 62.7% stressed latently, and 27.0% stressed highly. These show the farmers' stress level is high, especially in old age and female. 87.9% of the recipients have suffered from musculoskeletal disorder for the last year. By body part, 51.8% of the recipients have pain in waist, 50.9% in knee, and 37.8% in shoulder. The average time for spraying agrochemicals for the last year is 30.9 hours for insecticide, and 21.7 hours for herbicide. And farmers who cultivate fruit trees have been shown to have the most spraying-hours. The rate of agricultural injury in 2006 is 72.1 (/1000person). The results by health examination show the prevalence rates of obesity, hypertension, glycosuria, and metabolic syndrome in farmers are higher than those in general public or city dwellers.
Conclusion : From this research, along with a burden of agricultural work, we can identify many health problems(especially musculoskeletal system disorder) due to aging of farmers.

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[SY39-03]
Occurrece and Management of Farmwork-related Disease and Accident

Kyung-Suk Lee, Kyung-Ran Kim, Hyo-Cher Kim

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Although agriculture which is internationally regarded as one of the hazardous industries. has shown much higher rate than any other industry in outbreak of occupational injury and disease, the prevention or compensation policy has not been adequately developed and the economic difficulties of farmers are growing. Rural development administration, which thinks much of base formation for farmers' safety and health among many welfare policies, supports construction of prevention and management system for agricultural injury and disease on the basis of 'the 1st. 5-year's basic plan for promotion of living quality of agriculture and fishery'. It also establishes 'the long/mid-term plan for the research and development of agricultural safety and health', develops policies for attaining disaster reduction technologies and safety management bases, performs research and training to be occupational injury and disease and supported by a system.
According to the 2004 survey, the positive rate of farmers' syndrome was 42.7%. some researches show the rate of musculoskeletal disease in farmers is 2.4 times higher than that in non-farmers, the rate of acute/chronic disease is 1.3 times, and the injury rate is also higher. Especially, the analysis result of "farmer's safety mutual aid" shows the rate of injury and disease in farmers is 3.47, which is 4 times higher than the average of general industry(0.8).
Farmers' safety and health, which are not explained by aging only, are out of bounds of industrial safety laws. So, the preparation of the system unique to agricultural environment is needed to attain the policy and support for

prevention and compensation of farmers' injury and disease. For this, we intend to review the domestic/foreign agricultural safety and health management condition and propose a system to ensure the health of farmers and their family.

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[SY39-04]
Community Partners for Healthy Farming Intervention Research

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Production agriculture includes 1,824,000 workers and is among the three most hazardous industries with a fatality rate of 24.8 per 100,000 workers for agriculture versus 3.9 for all workers (U.S. Bureau of Labor Statistics, 2006). This program evaluates new or existing interventions related to selected hazards, illnesses, or injuries. The National Institute for Occupational Safety and Health funded specific projects which were selected from responses to a series of three requests for proposals. Almost all lead agencies were state universities. All had linkages to organizations that were trusted by the community-based target population.

These synergistic, active partnerships between experienced researchers, workers, managers, agricultural organizations, agribusinesses, and media in over 15 states enhanced access to the target population, identification of acceptable interventions, dissemination, evaluation, building infrastructure for health and safety, and sustaining interventions. Accomplishments have included: improved ergonomics for small vegetable growers, nursery workers, and harvesters of grapes, berries, and tree fruit; 1,292 safety improvements made voluntarily by Iowa farmers in the Certified Safe Farm project; and, in collaboration with lay health advisors, reduced eye injuries among Latino workers. Musculoskeletal pain was reduced five-fold with no significant change in productivity by decreasing the weight of grape-filled tubs from 25.9 Kg to 20.9 Kg. Management and workers enthusiastically adopted the smaller tubs.

Intervention products and models have had expanded usage. Replication of the eye-injury prevention by a community coalition with the largest Florida citrus grower decreased injuries 75%. The interactive materials for promoting roll-over protective structures (ROPS) on tractors has resulted in increased use of ROPS; the model is being utilized for introducing economics in high school social studies classes and in college agricultural economics classes. The model created for *Simple Solutions: Ergonomics for Farm Workers*, a document related to three projects, has been utilized for a comparable construction document.

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[SY39-05]
Acute Pesticide Poisoning among Agricultural Workers in the United States, 1998-2005

Geoffrey Calvert

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Background: Approximately 75% of pesticide usage in the United States occurs in agriculture. As such, agricultural workers are at greater risk of pesticide exposure than non-agricultural workers. However, the magnitude, characteristics and trend of acute pesticide poisoning among agricultural workers are unknown.

Methods: We identified acute pesticide poisoning cases in agricultural workers between the ages of 15 and 64 years that occurred from 1998 through 2005. The California Department of Pesticide Regulation and the SENSOR-Pesticides program provided the cases. Acute occupational pesticide poisoning incidence rates for those employed in agriculture were calculated, as were incidence rate ratios (IRR) among agricultural workers relative to non-agricultural workers.

Results: Of the 3,271 cases included in the analysis, 2,334 (71%) were employed as farmworkers. The remaining cases were employed as processing/packing plant workers (12%), farmers (3%), and other miscellaneous agricultural workers (19%). The majority of cases reported low severity illness (N=2,848, 87%), while 402 (12%) were of medium severity and 20 (0.6%) were of high severity. One case was fatal. Rates of illness among various agricultural worker categories were highly variable but all, except farmers, showed risk for agricultural workers greater than risk for non-agricultural workers by an order of magnitude or more. Also, the rate among female agricultural workers was almost 2-fold higher compared to males.

Conclusion: The findings from this study suggest that acute pesticide poisoning in the agricultural industry continues to be an important problem. These findings

reinforce the need for heightened efforts to better protect farmworkers from pesticide exposure.

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[SY40] New Challenges and Opportunities for Occupational Safety and Health

July 2, 09:00~11:00
Room: 304, COEX

Moderator: **K. C. Gupta**, Nation Safety Council, India
Jung-Hyun Kim, Korea Industrial Safety Association, Korea

[SY40-01]
New Challenges and Opportunities for Occupational Safety & Health

Krishan Chand Gupta

National Safety Council India, India

This Theme Paper for the Symposium No 40 of XVIII World Congress provides an insight into the new challenges and opportunities in Occupational Safety & Health (OSH) arising due to the rapid growth and globalization of economies.

The identified challenges are: developing and providing OSH services for newly developed sectors of economy, such as IT & BPO, Retailing, Health care, as these are not covered by well developed OSH regulations; continuously assessing the impact of cost-cutting measures on OSH and devising OSH services, such as, training packages and management strategies; developing appropriate control strategies and an effective OSH monitoring system for outsourced organizations; developing different types of disaster management response systems and capabilities jointly by the managements, authorities, and communities; and aligning overall management systems with global initiatives by the managements and keeping abreast and building expertise in OSH institutions for providing practicable guidance to organizations.

The opportunities offered by the challenges include: use of new technologies/methods to eliminate/minimize human exposure to hazardous processes, making constant improvements for enhancing overall performance, and enhancing global corporate image of organisations.

The suggested response strategies are: regulatory measures; self-regulatory initiatives at enterprise, industry association, and institutional levels; addressing the issue of multiple statutory inspections through voluntary measures by the managements; and capacity building for comprehensive disaster management services.

The author highlights the need for institutional collaborations at regional and international levels for capacity building to provide appropriate OSH services to organizations.

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[SY40-02]
Technical Supporting Model for Systematic Safety Management in SMEs

Jung-Hyun Kim, Jae-Il Lee, Soon-Gil Kwon

Korea Industrial Safety Association (KISA), Korea

KISA which was established in 1964 has been providing vicarious safety management services for SME's in Korea for more than 30 years. In order to help achieving zero accident in the workplaces, KISA has been applying Risk Assessment technique for KISA's clients from 2001, resulting in more than 3,000 client companies for which Risk Assessment has been implemented until today. This activity has contributed a great portion in achieving the accident rate less than 0.4% for the client companies KISA provides vicarious safety management services as of the end of 2007.

The fundamental ideas are to analyze and identify hazards potential in the workplaces jointly between labor and management and then decide risk ranking for each hazard recorded considering its frequency and severity, which in turn is used to estabiish improvement measures and to take corrective actions for any unacceptable risk to be reduced to acceptable level.

KISA has not only been directly involved in risk assessment process, but also supported the clients technically by training clients' employees on risk assessment methods, how to find out hazards effectively, etc.

In the coming years KISA is planning to produce Risk Assessment Manual customized to each category of business as well as the manual which describes the procedures and administration methods for Occupational Safety and Health Management, together with providing statistical data to measure the effect of adopting Risk Assessment in the clients' workplaces.

We believe that by incorporating this Risk Assessment system into legislation by the government ultimately, thereby, making every business place introduce and apply the system in their daily life, we can prevent workplace accidents and enhance occupational safety and health standard.

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[SY40-03]
New Challenges and Opportunities in Occupational Safety and Health

Jukka Takala

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Throughout the world, there is growing acceptance that accidents and ill-health at work impact not only on the lives of individual workers, their families and their potential for future work, but also the productivity and profitability of their enterprises and ultimately the welfare of the society in which they live. In short, safety and health at work makes good business sense, and maintaining acceptable standards is seen as an integral and key component of societal development and quality workplaces.

Work-related accidents and ill-health can and indeed must be prevented, and action is needed at international, regional, national and enterprise levels to achieve this. Yet the statistics appear to show an increasing trend in occupational accidents and, in particular, work-related diseases.

The impact of occupational accidents and diseases (which are 100% work-related and often compensatable) and other work-related diseases (which are only partly caused by work) can be measured using several different indicators. Reported accident and diseases statistics provide perhaps the most direct indicator, but such data are often very incomplete since under-reporting is common and official reporting requirements frequently do not cover all categories of workers anyway – those in the informal economy for example. Other indicators need to be used as well to obtain a fuller picture, such as compensation data, disability pensions and absenteeism rates, although these too provide incomplete data. For example, no country records and compensates all occupational accidents and diseases, although data for occupational accidents are more comprehensive than those for occupational diseases.

In his presentation Dr Takala will provide an overview of the most recent estimates of occupational and work-related accidents and diseases in the European Union and elsewhere.

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[SY40-04]
Beyond Borders: Bridging the Gap in a Two-tiered System

Leo Carey

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The past century has seen a tremendous improvement in safety and health practices as environmental safety and health is adopted as a value by the world's top global corporations. Top global companies represent the upper echelons of the safety and health world, but there is a second tier where child labor is common, working conditions are dangerous and safety training is non-existent. The true global challenge today is in bridging the gap between the CEOs who "Get it" and the companies striving to implement the most basic safety and health improvements. This paper gives examples of a country and a company working to overcome these obstacles. In September 2002, the United States Department of Labor awarded the National Safety Council a five-year, $2.3 million grant to implement mine safety improvement in China, by transferring knowledge and U.S. mine safety techniques. The project fostered the development of a strong professional relationship between coal mine safety communities in China and the United States. Home furnishings giant IKEA has developed a code of conduct on child labor that's part of their main code of conduct document. Employees of the company's trading services offices have contact with suppliers each day, monitoring production of IKEA products and observing social and working conditions on site. IKEA hires third-party auditors to perform unannounced visits in Bangladesh, India and Pakistan. Both of these case studies have many aspects that can be adopted by organizations around the world and used to improve occupational safety and health.

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[SY40-05]
Combating Occupational Diseases in Three Continents: Challenges and Good Practices in Latin America, Asia and Africa

Stefan Zimmer

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Insurances against occupational injuries and diseases worldwide are confronted with two main challenges:

1. Difficulties relating to reporting and recording occupational diseases, especially diseases with long latency periods.
2. Limited scope of coverage of social protection, leaving many risks uncovered in the "informal" sector.

Especially in developing countries, underreporting is the biggest problem for insuring occupational diseases (ODs). For instance, underreporting in the Southern African Development Community has been estimated to be from two- to sevenfold. The most extreme distortions occur with respect to chemical- and mining related illnesses. Here, the underestimate may be as large as 50-fold. When assessing possible causes, experts from African and Asian countries quickly point towards their "outdated" lists of ODs. While the need for reforming and updating old OD-lists is obvious, it must be noted that this alone will not eliminate underreporting. Other reasons are: victims to diseases already on the lists are not identified adequately; insufficient diagnostics due to too few or insufficiently skilled doctors.

Especially in Asia, Latina America and Africa we find many countries where only a small fraction of the workforce is covered by workers' compensation: While the informal workforce in industrialized countries is rarely larger than 10%, it may reach 70% and more in the developing world. It is estimated, that only between 5% and 10% of workers in Latin America have access to adequate occupational healthcare services. Accident insurance can play a crucial role in providing general practitioners – not specialized in occupational medicine – with at least some guidelines on how to recognize occupational diseases. By publishing and distributing "OD-bulletins" of not more than 3-5 pages, at least the awareness of doctors can be raised to inquire potential links of a disease with exposure at the workplace.

The full paper presents further good practices for answering these challenges.

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[SY40-06]
The New Challenge for Safety at Work and Life Environment Care: CITEC Guidelines

Annalisa Guercio[1], P. Fioretti[1], R. Giovinazzo[1], E. Incocciati[1], A. Magagni[2], B. Principe[1], P. Santucciu[1]

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The Committee on Technologically Complex Systems (CITEC) was born in 1997 with the purpose to draft guidelines for an integrated system of municipal waste management.
Since 2006, CITEC has included the new aspect of "safety at work", beginning a collaboration with the Technical Advisory for Risk Assessment and Prevention (CONTARP) of the Italian Workers Compensation Authority (INAIL), whose task is to provide education, assistance and advice, assessing workers risk in order to improve health and safety at work in waste management plants.
CITEC guidelines describe effective waste treatment technologies, recalling the concept of BAT, including procedures, techniques, technologies, maintenance, operating standards, efficiency checks, monitoring systems to reduce environmental pollution for the whole plant life cycle.
INAIL contribution to CITEC guidelines was settled to health and safety at work care from planning to dismission of each kind of plant (thermal treatments; selection systems; biological treatments; W.E.E.E processing), on the basis of the confluence between the meaning of BAT and that of "Good Practises", according with the definition of European Agency for Safety and Health at Work.
The social relevance of this initiative consists in the merging of these basic themes, since now independent – health and safety at work and environment care – with the actual common focus "prevention" (of environmental damages or of accidents and professional diseases).
Waste management enterprises social responsibility lies in taking care of environment against pollution, being aware that positive consequences of applying "good practises" will ensure safe and healthy workplaces, too.
CITEC workgroup will introduce the 2008 english edition of CITEC guidelines to EU and non-EU Countries to highlight the worldwide waste question in a preventional view in workplace where synergic effects of several risk agents are not yet wellknown.

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[SY41] Solutions to Emerging Safety Problems in Modern Society

July 2, 09:00~11:00
Room: 208, COEX

Chairperson: **Gi Heung Choi**, Hansung University, Korea
Moderator: **Yunseon Kim**, University of Incheon, Korea

[SY41-01]
Occupational Health for Well-being Era

Joung Youn Kim
Ministry of Labor, Korea

[SY41-02]
Safety Management in Australia

Jean Cross
University of New South Wales, Australia

Safety management systems in Australia evolved from quality management systems with little evidence that the requirements of ISO9000 did translate directly across into safety. Modern safety management systems have moved on substantially but are still often based on compliance with standard procedures rather thandesign to minimize health and safety risks. There have been many studies trying to relate sfety management system audit results or components of a safety management systems to outcome indicators of safety such as injuries, workers compensation costs or absenteeism. None have succeeded in proving that safety management systems as currently practiced are effective. Results from some additional research at UNSW are presented and some reasons for the apparent failure of safety management systems to produce a clear change in outcome indicators are proposed.

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[SY41-03]
A Strategy of OSH with the BCP for Disaster-response

Chan O Kim[1], Young Guk Kwon[2], Duke Hoon Jeong[3]
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The movement of introducing a business continuity program(BCP) in industry and public sectors with a dramatic change of a recent global disaster situation is actively on progress.
In International Standard Organization(ISO), it is constructed TC 223(Societal Security), so it is progressed a task of international standardization in a disaster management including BCP.
In case of BCP or ISO/TC 223, it is mentioned a system of crisis management and disaster management. It is approached to the dimension of safety management and security management for a risk of crisis or disaster.
Especially, it is included the important problem of occupational safety and health in the area of safety management. In the case of seriously introducing industrial management system with the base of BCP, it will be collide or override with a current occupational safety and health management system (OHSMS). Therefore, it is anticipated to give a serious burden and chaos to industry.
This study will analyze an influence of occupational safety and health management system with an introducing BCP. Furthermore this study suggest a reaction plan to gain a positive result of system, function and organization in company activity and protection of workers in occupational safety and health management area.

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[SY41-04]
A Study on the Application and Effects of Safety, Health, Environment and Quality Management System for Industries

Jae Wook Choi[1], Hyuck-Myun Kwon[2], Seok-Joon Yoon[3], Kyung-Hee Kim[3], Soo-Ho Shim[3]
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1. Background

Since 1990s, many guidelines have been developed for integrating safety and health, environment, and quality management systems, and many major companies have developed their own integrated management systems for sustainable improvement. There is an increasing need for an effective SHE&Q management system around the world.

2. Study Objectives

1) to analyze the objectives and status of IMS for SHE&Q,
2) to analyze the benefits of SHE&Q
3) to identify barriers and obstacles to the implementation of IMS;

3. Respondents & Method

Included in this survey were about 300 companies in Korea that have previously received the KOSHA 18001 certification from KOSHA and about 200 companies that have already received ISO 9000 and ISO 14001 certifications.

4. Results

1)Analysis of the Application of an Integrated SHE&Q Management Systems

In this survey on the development and application of an integrated SHE&Q management system, 40.2 percent of the respondents answered they had integrated their hitherto separate safety and health, environment, and quality management systems into a single system. 79.4 percent of the respondents replied they needed an integrated management system

2)Benefits and Effects of an Integrated SHE&Q Management System

As the most significant effect of implementing an integrated SHE&Q management system, most respondents selected systematic approach to SHE&Q and better reputation.
In this study, the benefits and effects of an integrated SHE&Q management system were more pronounced in large multi-national companies, and for companies in the chemical industry.

5. Conclusions

1. Facilitate the integration of hitherto separate management systems through practical and detailed guidelines and case studies, development of manuals and procedures, and training programs.
2. Collaborate with the government and related organizations to conduct joint research projects and to share relevant information

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[SY41-05]
Analysis of Recent Situation and Response on Hacking

Jae Kwang Lee

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With the growth of the internet, many private as well as public organizations have begun to provide services online. The rapid expansion of the online service has also brought about a corresponding increase in security problems such as hacking and the vulnerability of the underlying infrastructure that support the online activities. The paper analyzes recent security breaches and offers countermeasures and guidelines.

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[SY41-06]
A Direction for Future Safety Management System Incorporating Recent Technological and Business Innovations

Kee Bong Yoon

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[SY41-07]
Developing and Using a Customized E-learning Course to Improve Labour Inspector Training - A Successful Canadian Collaboration

Len Hong

Canadian Centre for Occupational Health and Safety, Canada

This presentation will describe the special collaborative process used to develop an e-course for Canadian labour inspectors and demonstrate the training features designed to fulfill the unique training needs of Canadian labour inspectors.

For many years traditional classroom training for labour inspectors has provided good results. However, there is an ongoing need to provide training of new employees and re-training of current employees. Training can become out of date, and very costly, especially if only a few inspectors need to be trained and the training occurs infrequently. Infrequent updating of training can result in a wide disparity in training approaches and uneven quality. Training is proportionately more expensive for smaller government departments and these departments experience infrequent turnover of labour inspectors. When hiring new inspectors or retaining current inspectors is required there is a demand for rapid, high quality and consistent training.

With the recent developments in modern computerized delivery of training such as e-learning, there was an

interest in 2007 among Canadian labour ministries and departments to develop a pilot e-learning course specifically for Canadian labour inspectors and evaluate its utility.

Two Canadian OSH jurisdictions – the governments of the province of New Brunswick and the Yukon territory, worked with the Canadian Centre for Occupational Health and Safety (CCOHS), to develop a customized e-learning Lockout Course specifically for labour inspectors. This course was designed and developed to update government inspectors' training about the new Canadian Standard for lockout and the corresponding labour inspectors' role in lockout legislation. Course design and development involved collaborative effort and was jointly led by these two jurisdictions so that the training program uniquely emphasized and supported the inspector's role to enforce legislation, conduct inspections, provide advice, and issue orders.

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[SY42] Asbestos: International Trade Union Campaign on Eliminating Asbestos Use and Preventing Asbestos Diseases

July 2, 09:00~11:00
Room: 402, COEX

Chairperson: **Apolinar Tolentino**, BWI, Asia Pacific Office
Moderator: **Fiona Murie**, BWI

[SY42-01] International Trade Union Campaign on Eliminating Asbestos Use and Preventing Asbestos Diseases

Fiona Murie

Building and Woodworkers International, Switzerland

The Building and Woodworkers International is committed to promote the elimination of the use of all kinds of asbestos and asbestos containing materials, and the elimination of diseases caused by exposure to asbestos. In 2000, the BWI began a global campaign, which has gradually developed and gathered momentum, due to the activities of our affiliated trade unions in their respective countries. There are four action areas in our campaign:1. The need to stop using asbestos world -wide as soon as possible 2. Alternatives to asbestos and re-conversion of the asbestos cement industry 3. Prevention of exposure to installed asbestos 4. Supporting those affected by asbestos diseases. Examples will be given of the trade union contribution to national strategies and workplace prevention initiatives.

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[SY42-02] Case Study of One Worker's Struggle for Recognition of Occupational Disease Due to Exposure to Asbestos

Seok Keun Baik

Korean Construction Workers Union, Korea

As is widely known internationally, construction workers are the most exposed to asbestos and thus prone to asbestos-related diseases. This is no exception in South Korea. Although the government, announced in February 2007 a ban on asbestos in 2009, the government has failed to seriously recognize asbestos-related diseases as an occupational disease and thus, it is difficult for workers to receive OHS benefits.

For the past two years, the Yeosoo local union of the Korean Federation of Construction Industry Trade Union has been working to get recognitions of asbestos-related disease as an occupational disease by the South Korean government for one of its members, Lee Jae Bin. Lee had been working in the construction plants for 17 years and during this time was exposed to asbestos since he was not properly trained nor given appropriate safety equipment to protect him.

For over a year, the union has waged a vigorous campaign on behalf of Lee to get recognition of his cancer as an occupational disease in order for him to receive the appropriate OHS benefits. Despite aggressively lobbying the government and conducting several activities that include a mass public and media campaign, demonstrations and rallies, and sit-down demonstrations, the government has still refused to recognize Lee's cancer as an occupational disease. The union is working with a broad coalition of NGOs, environmental groups, and trade unions on this campaign.

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[SY42-03]
Global Ban on Asbestos: The ALU-BWI Joint Initiatives in the Philippines

Gerard Seno

Associated Labour Unions, Philippines

The Philippines adopts the policy of *control by regulation* of the use and disposal of asbestos products. The use of chrysotile or white asbestos is not banned. Only crocidolite or blue asbestos and amosite or brown asbestos are banned. The Philippine consumption level is more or less 0.1 Kg/Capita/Year and the trend is increasing as of 2001.

The building Unions in the Philippines began working on the dangers of asbestos in 2003. The involvement of ALU-BWI in the global campaign to ban asbestos started during the commemoration of the International Workers Memorial Day of April 28, 2006 where the Philippine affiliates organized a symposium to raise awareness concerning the ill effects of asbestos and the need to ban it.

The presentation will focus on ALU-BWI series campaign interventions on asbestos including that of the pending bill in both houses of the Congress to ban asbestos.

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[SY42-04]
Construction Workers Union and Asbestos: Case Study From India

Vipul Pandya

Construction Workers Union, India

The presentation shall highlight the crucial role of the trade union movement along with a network of organizations and individuals in creating awareness and lobbying for ban on asbestos. It shall focus on raising awareness among construction workers on the alarming ill effects of asbestos and their vulnerable situation, as the heaviest exposures occur, particularly during the removal of asbestos at the time of renovation or demolition work carried out at building sites. The presentation shall clearly bring out examples of union awareness campaigns among its membership, sensitization programs organized for other key stake-holders and the strengthening of alliance with other trade unions and like-minded organizations (including that of victims) for a total ban on asbestos in India.

Bandhkam Mazdoor Sangathan (BMS), an affiliated trade union organization of the Building and Wood Workers International (BWI)1[1] is actively working in the construction sector in the Western Indian State of Gujarat. Health and safety is a priority for the BMS and the union has been relentlessly raising awareness among the workers (*majority of whom are migrant tribals*) at all major construction sites. The union work includes – organizing medical health camps, worksite safety demonstrations, research and training, networking with doctors and joint advocacy work with trade union support organizations.

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[SY42-05]
Asbestos Banning and Trade Unions Campaign Role in India

Karnan Ramamurthy

Indian National Rural Labour Federation, India

Hundreds of thousands of tons of chrysotile asbestos is mined in Russian, Kazakhstan, Canada and Brazil and is being exported to India every year. UN trade figures reveal that India imports more than 40% of the world's asbestos production. The Indian government, hand in hand with the asbestos mining and manufacturing lobby, are amending the rules and regulation to favour the usage of asbestos in industry, especially in construction. The Indian government has not ratified ILO Convention 162.

Trade Unions in India have taken up the task of promoting a safe working environment and campaigning for a complete ban asbestos in India. In their campaign they are promoting the use of alternative materials. They are lobbying the Goverement, Employers Organizations and the general public to promote the Ban Asbestos campaign in India. Trade unions are working on three-point strategy: Advocacy, Capacity Building and Network & Alliance Building. For 28th April, International Workers Memorial Day, Trade Unions are writing to their respective Members of Parliament to push the Indian Government to ban trade, ban manufacture and ban use of all kinds of asbestos. Trade Unions feel that today's exposures guarantee an epidemic lasting at least another generation, with the asbestos graveyards shifting from the developed to the developing world.

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[SY42-06]
Worldwide Mobilisation of Asbestos Victims' Groups

Laurie Kazan-Allen

International Ban Asbestos Secretariat, United Kingdom

The mobilization of grassroots asbestos victims' groups escalated dramatically towards the end of the 20th century; as a result, there are now groups on every continent, with the exception of Antarctica. Efforts to forge international links between these bodies began in the early 1990s and culminated in the formation of the Ban Asbestos Network (BAN) and the International Ban Asbestos Secretariat (IBAS). Due to intensive lobbying and campaigning efforts by the national groups and international networks, levels of public and professional awareness of the asbestos hazard have been raised, asbestos industry propaganda has been exposed and governments have acted to address national asbestos legacies.

This presentation will precis the work of these groups, highlight some of their many achievements and suggest strategies for joint inititives by all social partners in the campaign to achieve justice for the injured and ban the futurue use of asbestos, an acknowledged carcinogen.

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[SY43] Improvement of Work Environments Using Ergonomics

July 2, 09:00~11:00
Room: 330, COEX

Co-Chairperson:
Masaharu Kumashiro, University of ccupational and Environmental Health, Japan
Seung Hun Shin, Pan-Pacific Council on Ergonomics

[SY43-01]
How Do You Use the Direct Posture Observation in the Field of Occupational Health?

Tetsuya Hasegawa

Kinki University, Japan

Direct posture observation methods are available to analyze the work postures. Due to easiness and low cost when compared to the other posture observation methods, these are widely used. Especially in OWAS, direct posture observation techniques are used. However still there are unsolved problems and limitations of existing direct posture observation methods. So, new classification was used. The main purpose of this study was to evaluate the observer's ability to identify the human body postures correctly, especially bending of waist and the twisting of body trunk. Further it was examined that how to improve the correct responses of the observers. The study results revealed that, observer training improved the correct responses of the bending and twisting angles except the bending angle of 10 degree. It was suggested that, angle of bending should be extended 15 degree or more. Furthermore, additional training methods should be developed.

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[SY43-02]
Developing a European Framework for Psychosocial Risk Management with a View to Global Application (PRIMA-EF)

Evelyn Kortum[1], **Stavroula Leka**[2]

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In the different Member States of the European Union, as well as many industrialized countries worldwide, there is a great variety in the approaches for dealing with work-related stress, which is a worldwide rising problem not restricted to Europe and other industrialized counties.

Approaches may focus on the individual and ways of promoting their health, or treating those in poor health; and/or those that focus on the causes of work-related stress. The challenge is to address differences among countries and actors as concerns awareness, understanding and acknowledgement of the problem.

PRIMA-EF aims at establishing a framework that will accommodate all the existing (major) risk management approaches to work-related stress across the European Union. This framework can be built from a theoretical analysis of the risk management process, identifying its key elements in logic and philosophy, strategy and procedures, areas of measurement and types of measure, and from a subsequent analysis of typical risk management approaches.

This presentation discusses the PRIMA framework philosophy, logic, and key principles. Main results of two studies conducted with tri-partite stakeholders across Europe will be presented. The first is a survey-based study with about 70 key stakeholders across Europe, and the second a qualitative study structured around focus groups with stakeholders and policy experts in Europe. Both studies explored the effectiveness and needs related to regulations governing health and safety at work, the perception of work related stress and psychosocial risks, the role and effectiveness of dialogue and cooperation between the social partners and the role of corporate social responsibility. PRIMA should inform decisions on the development of new and existing approaches to the management of work-related stress and will serve as a basis for development of a global framework, which will require adapting to the particular situations in developing and newly-industrializing countries.

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[SY43-03]
New Approach for the Human Error Prevention

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The human error becomes a serious problem not only on the nuclear plant but also on the medical care and the manufacturing industries. Therefore, it introduces a new viewpoint and how to work for the human error control and we introduce an activity in a certain medical care maker. The key words are an education based on cognitive aspects and awareness and training methods. Now it has became an important point in the medical care, though it is a general word in the industrial field. The policy for that is given in this report.

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[SY43-04]
A Study of Acceleration Forces of Each Joint According to Gait Types

Yeon Ju Oh, Chang Min Lee

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x; anterior-posterior, *y*; left-right and *z*; longitudinal axis) using three axis acceleration gage and investigates changes to the body on each axis. As gate speed increased, impact forces increased significantly. Impact forces on *x* axis and *z* axis are higher at lower limb than that of the upper limb. However, impact force at the knee is higher than that of other parts on *y* axis regardless of gait speed significantly. Left-right motion (*y* axis) at knee is quite limited, so the impact force of the knee is higher than that of the ankle and hip joint. Consequently, the study found characteristics of the impact force of the body segments according to the gait features and understood relations of the impact forces as interaction as well as effect of each factor.

Keywords : Impact Force, Acceleration, Gait

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[SY43-05]
"Ubiquitous Healthcare Monitoring Service System Using IP-USN In Industrial Hygiene Environment "

Peom Park[1], Youngki Park[2], Kihyung Kim[2], Jaebeom Park[2], Jaesoo Yang[2]

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Industrial worker's health is influenced by workplace environmental factors and their information is defined by Industrial Hygiene expert or medical doctor. It is important how to manage and to monitor the potentially dangerous situation with the unhealthy environmental factors for the elderly industrial workers.
Ubiquitous Healthcare Monitoring Service system is designed and implemented in Industrial Hygiene environment at Hwasung city and Kyungki-do province on 2007 involving some service functions of context awareness, autonomous management and self-growing intelligently.
In this industrial uT-health solution, Industrial Hygiene factors data including vibration, humidity, temperature, noise, and dust is sensed, logged and accumulated in system DB using IP-USN based IPv6. Also, the heart rate data of the worker is collected. After filtering collected environment data, the result of workplace environment variation and workplace hygiene factors on each worker is extracted. By this suggest recommendations based this result, workplace is sustained more stable environment and people can work more efficient and healthy.

On real-time monitoring at all times during the service period, workplace environment is controlled effectively and industrial disease such as hearing ability will be prevented effectively. Also, some relations and effects between industrial environments and some chronic disease can be defined and studied with very reliable scientific data from the work place.

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[SY43-06]
A Study on Relationships between Work-Related Musculoskeletal Disorders and Job Stress at Job-Shops

Jae Hyung Kim, Kwan S. Lee, Young J. Chun

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The objective of this study to find relationships between work-related musculoskeletal disorders and job stress for workers at job shops. A survey using a questionnaire was conducted on job stress, their perceived intensity of work, work conditions, and their personal characteristics for 944 male workers. They were also asked whether they have experienced pain on their musculoskeletal parts. a Chi-square analysis was used to analyze the data. It was found that although works at job shops are not paced, workers can get high job stress due to the intensity of their work. It was also found the high intensity of work also caused work-related musculoskeletal disorders.

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[SY44] Social Responsibility in Occupational Safety and Health in Latin America

July 2, 09:00~11:00
Room: 311A, COEX

Chairperson: **Victoriano Angüis Terrazas**, AISOHMEX, A.C., Mexico
Moderator: **Octavio Albores Sol**, AISOHMEX, A.C., Mexico

[SY44-01]
Social Tripartite Responsibility in Safety and Health in Mexico

Victoriano Anguis Terrazas

AISOHMEX,A.C., Mexico

Mexico, this looking for to improve its conditions of life, through the development of the educative process and the improvement of the conditions of work, for which it requires to assume the social commitment of the three main sectors, Government, Employers and the unions.
The Safety, Hygiene and Health, considered this in an Integral concept, has advanced, nevertheless not sufficient it, according to the necessities of a country in development, product of the lack of political continuity and system, on the part of the governmental sector, which allows the desirable pursuit, to assure that the standards marked in their laws and regulations are fulfilled, to this will be necessary to combine the little interest of the employers in its fulfillment, when considering this like a cost and not like an investment, the workers, through its unions, still they maintain the belief of the unnecessary thing to accept the as much internal indicatives as in the marked thing in the corresponding regulations, since his you lead, by ignorance or Interest do not defend in correct form the rights of the workers.

Mexico , is a country that it has signed and ratified the international treaties with the Organization the International of the work, OIT, the Safe Work, and Decent Work, to try to improve the management systems, for the correct administration, which allows better conditions of work, to reduce to the accidents and diseases product of the assigned work.
The Tripartite Social Responsibility in Safety and Health in Mexico, although in results has had an important loss and at least the control of the accidents and diseases, still enough lack to do, since the reality, demands a greater no single joint participation and fulfilling in the corresponding regulations, as much from the labor point, of environmental and the health.

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[SY44-02]
To Better Recognize Work Related Absences due to Illness and Accidents to Increase the Social Responsibility of Companies

Remigio Todeschini

Social Security Ministry, Brazil

The Previdência Social of Brazil has developed a new way to increase the social responsibility of companies in the area of
Prevention of work related injuries.

The new methodology is called
"Nexo Técnico Epidemiologico" This Methodology reports illness associated to work absences of over fifteeen days and lists them in the records of businesses by their incidence level.

This Methodology enables companies that have a smaller number of work absences related to ilnesses to reduce the cost of insurance for work related injuries by half.

These companies are then allowed to charge the responsibility for the injuries when they happen. The system allows us to work with each company individually, analyzing each situation on a case by case basis.

The advantages of this newly proposed method does not intimidate the employer to notify work related injuries. As a result, we have observed, since April 2007, that the number of accidents and diseases reported by companies is actually two times lower for companies that make prevention and three times higher for companies no work with prevention in the area of Health and Safety Labor than the number previously reported.

It is of extreme importance that employees report the real number of incidences of work related injuries so that we can
increase their social responsibility in the area of Health and Safety Labor.

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[SY44-03]
Safety and Health and Its Entail with Agricultural Certification Norms in Central America

Dagoberto Rojas

ACSAL, Costa Rica

The agricultural companies in Central America are dealing with a transformation in their management systems been forced to fulfill Norms of Certification to be able to export their products (bananas, coffee, pineapple, melon, flowers) to the United States and Europe. The Norms that have contributed in the improvement of the working conditions of the agricultural workers are as follows: Rainforest Alliance, SA 8000 and Eurep Gap. This Norms are not limited to guarantee the quality of the products, their cleanliness and the environmental protection, although they also include the implementation of safety and health measures that guarantee good working conditions for the agricultural workers and their families. The ILO has offered support to the worker and employer Organizations regarding Safety and Health issues, so they can face in a competitive way these new challenges of the Certifications.

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[SY44-04]
Responsibility in Safety and Health of OBESST in Brazil

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The author, based on his professional experience in the area of safety, health and environment - HSE - outlines the current scenario of this sector in Brazil: delay in the revision of standards of HSE - NR; devaluation of the HSE, by inadequate treatment, emphasis of surveillance on economic issues, enhancement of the environment according to international pressure: the need to sensitize the government; flexibility of labor relations; HSE professional qualification level raising: unions negotiate the SST for amendments, inconsistency of actions held by different actors of HSE; 99% of companies classified as micro and small, with 11 million workers still HSE uncovered, the HSE experts retire and do not leave replacement. The Author, based on 14 Accident Prevention Entities, concludes that prevention of accidents is not a priority, but permanent, and therefore it should be set as value to be urgently integrated to the business of the company, the individuality loses strength in face of the union, because the team work of a group should prevail, especially when the preservation of rights and new HSE guiding visions is wanted. Thus, the Union of Entities of HSE – the OBESST – Brazilian Organization of Entities of Labor Safety and Health and Environment, was established in Brazil in 2005. The OBESST is a Permanent Forum of Entities of Safety, Health and Environment, with the main objective of promoting ethics, citizenship, human rights and other universal values of workers within the environment and working conditions, combined with the promotion of economic and social development and combating the losses imposed on the society resulting from accidents and diseases at work.

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[SY44-05]
The Truth - Chrysotile Asbestos

Luis Cejudo

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As President of the Latin American Chrysotile Association which includes several producing countries such as: Bolivia, Brazil, Colombia, Ecuador, El Salvador, Mexico, Peru, Venezuela, it is of prime importance that our voice be heard, for this industry not only complies with rules and regulations in order to maintain a safe working conditions, but also no friable products are manufactured and the use of amphibole asbestos has been finalized. Our industry today, is responsible and constantly works on the development and improvement of clean labour conditions, with the knowledge that only high density product are made and therefore, not affecting the health of workers or the population but on the contrary, attending some of its' important needs.

When talking about the important needs of the population it should be mentioned that economic, durable Chrysotile-cement pipes are required for the delivery of clean water and for the transportation of sewage. We know that the World Health Organization states that ingested asbestos is of no risk to human health. Chrysotile cement sheets are required for roofs and scientific studies have proved that there is no fiber release.

Anti-Chrysotile asbestos movements are going around the world; unfortunately this trend oriented towards an international ban and the promotion of its substitutes, clearly demonstrates their interest does not lie in the concern of the protection of workers. Instead it is an anti-asbestos lobby with poor knowledge of the topic and unfounded persecution of chrysotile asbestos which are yet another proof of pseudo-science?

The future for safety and health lies on responsible actions, on the care of workers and population but also on the future of human kind through a responsible industry.

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[SY44-06]
Social Responsibility of the Company and the Sustainable Development

Luiz Alberto Bardal

ECOVAP, Brazil

The Brazilian companies hold the corporate sustainability rank in Latin America. However, Brazil still has a long way ahead to reach an environment conducive to the responsible competitiveness. A socially responsible company is one that leads a profitable business by assuming, at the same time, all the social, economical and environmental concerns that rise from the society, attempting to supply all the demands of those, who, in any way, take part in the life of the company: shareholders, clients, employees, government, labor unions, and community. The responsible behavior generates an aggregate value that increases productivity, improves the level of retention of clients, reduces the risks of lawsuits and provides better possibilities of performance in the market. The "Brazil cost" related to the burden resulting from the Labor Accidents in Brazil is a challenge to be faced, since it interferes in the global competitiveness, generating losses to the public and private sectors with intense social demands. The author reports a practical case of a certification in the SA 8000 Diploma of a construction and setting up company in a Petroleum Refinery Modernization Project, emphasizing what is possible, regardless all the difficulties in maintaining a fair working environment with respect to the labor and social laws.

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[SY45] International Transportability of Safety and Health Practitioners' Credentials

July 2, 09:00~11:00
Room: 311BC, COEX

Chairperson: **Martin Ralph**, Industrial Foundation for Accident Prevention, Australia
Moderator: **Jim Allan**, Canadian Society of Safety Engineering, Canada

[SY45-01]
North American Perspective

Eddie Greer

American Society of Safety Engineers, United States

As the world continues to shrink the number of multinational employees continues to increase. This has created an opportunity for safety professionals from different countries to collaborate on safety issues and projects. It has also created a dilemma for the safety professional to determine if safety credentials are valid and accepted in the country where they are working or plan to work.

International transportability of credentials allows safety professionals who have earned a certification or met a competency standard in one country to practice in another country based on the certification or credential from the original country. This is most effective when a credential from one country is recognized as equivalent and sufficient to qualify for practice in another country.

Today there is little opportunity for the transportability of credentials in the safety profession. While there are a limited number of safety professionals in need of international transportability today, it will become an issue in the not so distance future. The globalization of business will increase the need for the international transportability of safety credentials in the future.

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[SY45-02]
North American Consolidated Perspective

Eldeen Pozniak

Pozniak Safety Associates Inc., Canada

There is a need for a system to address the transportability of Safety Credentials that we feel is not present at the moment.

Where are some of the issues as the CSSE see it:

What are the levels of skill, knowledge and experience necessary.

Where does different cultures, religious beliefs and customs come into play – how do we prepare the Canadian profession for that in Saudi, or the Singapore practitioner for that in Mexico.

As countries are all looking at different competency studies, licensing and designation schemes and new training centers and diplomas are being created, how does one organization keep a pulse on all of that and come to a common agreement on how each one measures to another.

What type of screening mechanism needs to be in place to ensure objective and unbiased comparisons to work and be recognized.

So what do we have to do – we have questions, we recognize there are issues,.... I believe that we need a multi-step process to achieve the international transportability of safety credentials. I also believe that many players need to be represented around the table to do so. Many organizations and countries are looking at this, and continued dialogue and collaborative approach is necessary to ensure that it is a system or process that works,...

But we must be doing more than acknowledging it is an issue, thinking it is a good idea,... we must want it,... ask for it ,... and work together to get it.

CSSE supports INSHPO as working with credentialing organizations and member organizations to form a committee on the international transportability of credentials, and work with other organizations who are also working toward this goal.

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[SY45-03]
An Australasian Consolidated Perspective

Martin Ralph

Industrial Foundation for Accident Prevention, Australia

Australia has a centralized education and training accreditation scheme, managed by the federal Department of Education, Science and Technology.

Each State and Territory in Australia is empowered to accredit courses in accordance with the federal Governments directive's which are captured in the Australian Quality Training Framework (AQTF). Under AQTF, standards are issued for Accrediting Bodies, and Accredited Courses. These administrative structures and standards ensure a nationally uniform approach to course delivery and competency outcomes.

A component of the AQTF is the Australian Qualifications Framework (AQF), which, in essence, aligns the competency outcomes of a course to the proposed hierarchy within an organization that a successful candidate would occupy. By way of example, a new starter would require an AQF level 1 competency outcome, whilst an executive manager would require AQF level 6 or above.

The AQTF and AQF have been applied to the OSH discipline in Australia. The competencies required to be possessed by those in the safety and health profession are captured in the Business Services Training Package (BSB07).

Within BSB07, the OSH profession has a series of qualification pathways:

- Certificate III in Occupational Health and Safety;
- Certificate IV;
- Diploma; and
- Advanced Diploma.

All of the qualifications have articulated competency outcomes, which have been developed by Industry Advisory Groups. The competency standards have been implemented for nearly 2 years in the current format.

However, little consultation has occurred with the profession, and training providers. As a result although consensus has been achieved in relation to competency outcomes, training standards and nomenclature vary considerably between jurisdictions.

This paper outlines the accreditation process and the definitions of competence for the various positions within the OSH fraternity in Australia.

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[SY45-04]
An Update on New Zealand's Position on the International Transportability of Safety and Health Practitioner Credentials

Neville Rockhouse

New Zealand Institute of Safety Management, New Zealand

New Zealand supports the concept of having credentials that are transportable around the developed world, but acknowledge there is significant work to be completed in this country first. The country has a significant lack of academically qualified individuals working throughout all industries as safety professionals. Most of these have formal overseas qualifications. NZISM as the national body has had to create a professional development framework that recognises not only the academic progress of its members, but also experience in the job.

To this end, development of a dual pathway is underway. Academically qualified will progress as would be expected, but also allow for experienced practitioners to build on their skill-sets without the necessity of returning to full-time academic study. The NZISM national council believe that once the relevant mechanisms are established, over time, we will be better able to shape the industry.

To create and then sustain career development pathways the context of New Zealand OH&S Competencies was identified.

Points of concern.

1. The language is confusing and therefore must be confusing to our members.
    a. Competency
    b. Ethics
    c. Standards
    d. Qualifications
    e. Proficiency
    f. CPD's

We feel that there must be a standard set of language used with clear definitive definitions. The International effort should do this around recognition of Safety and Health Practitioner Credentials.

2. There is NO clear description of what OH&S practitioners actually do within their roles. To create core competencies without this knowledge is foolhardy.

Where is NZ now?

NZISM has just finished a web based survey to attempt to find what NZ OH&S practitioners thought were the major competencies. Early indications are that there is wide scope of OH&S competencies and a propensity to equate qualifications with these competencies.

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[SY45-05]
International Transportability of Safety and Health Practitioner Credentials (The Singapore Perspective)

Edwin Yap

ESIS Asia Pacific Pte Ltd., Singapore

In 2008, the Workplace Safety and Health Act has been extended to industries such as hotels & F&B, veterinary, healthcare, water and waste management, transport and landscape care and maintenance.

By 2010, the Act will be eventually extended to all workplaces. This will lead to an increased need for Workplace Safety and Health (WSH) management and inadvertently boost demand for WSH professionals.

In this paper, we will define the nationally recognised, rigorous, competency based WSH Professionals Workforce Skills Qualifications (WSQ) framework, which is a training and skills framework based on industry-agreed standards

and benchmarked against international best practices. We will also explain the 2007 WSH Officers regulations linkage with the current certification process.

With the globalization of Safety and Health in mind, SISO welcomes the initiative of international transportability of Safety and Health practitioner credentials. Singapore WSH qualification, certification and continual education elements will be compared with renowned international practices and discussed in details.

In SISO, we make the difference; we strive to achieve the ambitious goal, in reducing the fatality rate to 1.8 by 2018, which is the new target set by the Singapore Prime Minister. Leveraging from this initiative, we hope to solidify the competency strength of the WSH professionals in Singapore and help to reduce workplace accidents, prevent the potential loss of precious lives, and inculcate a safer and healthier workplace for all.

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[SY45-06]
A European Consolidated Perspective

Paul Faupel
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[SY46] Strengthening OSH Institutions/ Structures/Processes in Africa

July 2, 09:00~11:00
Room: 334, COEX

Moderator:
Mary Muchengeti, African Regional Labour Administration Centre

[SY46-01]
Strategic Approach for Strengthening of National OSH Systems Through National Programme in Kenya

Stankey Kangethe
Occupational Health and Safety Services, Kenya

[SY46-02]
Occupational Health and Safety in the African Region: Future Perspectives

Thebe A Pule

World Health Organization, Congo

Health is made or broken in homes, at play, at school and at places of work. There are many factors that contribute to health outcomes in a positive and negative way. An environment where people undertake activities has much to contribute and so is the management of the environment itself.

Institutions constitute some of the key determinants for policy direction, management of activities, management of resources including human, that determines the health outcome, through their action or inaction. An average person spends more than half of active life at the place of work. It is at the workplace where health is made, promoted and maintained, throughout ones career and it is the quality of the workplace which determines the life at and after work. More and more, life expectancy is measured by the number of healthy years one spends as healthy life expectancy (HALE) or quality of life in years (QALY). A healthy workplace or health promoting workplace will translate into a healthy life and thus improved quality of life for an individual.

Improving the capacities of institutions which promote health is one direction that can and will ensure that countries have the ability to fulfill their obligations towards the Millennium Development Goals (MDGs), contribute to poverty reduction and importantly improving on the health outcomes. World Health Organisation (WHO) and International Labour Organisation, in the area of health and safety at work, have agreed to work together to support to improve the capacities of institutions in countries to realize their stated objectives. The World Health Assembly and ILO Assembly have adopted various resolutions and conventions towards the health and safety at the work place. • • •

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[SY46-03]
Strengthening Occupational Safety and Health [OSH] Institution in Uganda: Improving OSH Service Delivery, a Strategy to Cope with the Changing Working Environment

Ronaldley Miti

Ministry of Gender, Labour and Social Development, Uganda

The steady economic growth of at least 6% per annum of GDP for past two decades is slowly transforming Uganda from a predominantly subsistence agricultural economy to a manufacturing and agro-processing. However, Occupational Safety and Health (OSH) service delivery has not moved fast enough in the period to catch up with the industrialization effort.

Programmes such as the ILO Strengthening Labour Relations in East Africa (SLAREA) project assisted greatly in demanding for enactment of new Labour laws including the Occupational Safety and Health Act, Act 9, 2006, giving the Department of Occupational Safety and Health an updated legal instrument.

Further, the resultant discontentment from worker's organizations due to poor OSH service delivery and the opportunity to host the prestigious Commonwealth Heads of Government Meeting (CHOGM) prompted the Government to take measures to improve the status of the department of Occupational Safety and Health to better its service delivery.

This was assisted further with the adoption of a training policy requiring 4% of the Institution's recurrent budget to be allocated for staff training. Also there is hope that the Department's budget allocation will be increased by government to unable the department fulfill its mandate fairly adequately

Therefore, Strengthening OSH Department through retooling and training shall improve OSH service delivery.

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[SY46-04]
Strategic Approach in Implementing Occupational Health Legislation in Developing Countries: The Tunisian Experience

Halim Hamzaoui, Dhouha Rezgui, Kamel Lahmar, Lotfi Chemli, Ahmed Bouzouida, Ali Rejeb

Occupational Health and Safety Inspection Department, Tunisia

The implementation of an occupational legislation has to make according to a strategic approach allowing setting up a coherent structure to promote health at work. The experiences realized in several countries not obeying this step strategy did not succeed and ended in an "ornamental " and " expensive" occupational safety and health structures.
Tunisia chose the strategic approach by stage allowing an implementation progressive but sure of structures of prevention and occupational safety legislation. The first step begun from the dawn of the independence and concretized essentially during the revisions of the employment law of 1994 and 1996 allowed to set up the general legal frame and to define the structures of occupational safety and health, in particular the bodies of management, control, assistance and provision of a service. The second stage begun in 2000 defined exactly the attributions of the various structures and organized the structures of prevention inside the enterprise. The 3rd stage will try to define the practical modalities of control of occupational hazards.
This initiative allowed a progressive and permanent improvement of indicators concerning occupational safety and health with in particular a decline of the frequency index of 45 ‰ in 1996 in 32 ‰ in 2007 and an improvement of occupational health coverage from 20% of the working population in 1994 to more than 40 % in 2007.

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[SY46-05]
Strengthening OSH Institutions / Structures / Processes: The Role of the African Regional Labour Administration Centre

Mary Muchengeti

African Regional Labour Administration Centre (ARLAC), Zimbabwe

The African Regional Labour Administration Centre (ARLAC) was set up by the ILO in 1974 as a regional centre for the development of labour administration in member countries. The mandate of ARLAC as a regional institution is to strengthen labour administration systems in English speaking African member countries through training, research, consultancy and advisory services. Membership of ARLAC is drawn from English-speaking African countries represented by Ministers of Labour/Employment from Botswana, Egypt, Ethiopia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Namibia, Nigeria, Sierra Leone, Seychelles, South Africa,

Sudan, Somalia, Swaziland, Uganda, Zambia and Zimbabwe. These member countries formally ratified the ARLAC Agreement, which binds them to the pursuit of the Centre's objectives and to support its operations.

The general objectives of the Centre, as provided in Article 2 of the ARLAC Agreement include the following:

- To provide training for officials at all levels of the labour administration system;
- To provide consultancy and advisory services directed towards strengthening; labour administration systems in member countries;
- To undertake studies and research in all aspects of labour administration;
- To provide information services for the benefit of member countries;

This paper will serve to introduce ARLAC and to outline how it has over the years managed to fulfil its mandate and to remain a relevant institution.

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[SY47] Designing and Delivering Safety and Health Training for Workers with Low Language or Literacy Skills

July 2, 09:00~11:00
Room: 336, COEX

Chairperson & Moderator:
Martha Guevara, National Safety Council, United States

[SY47-01]
The Opportunity for Corporate Responsibility in the Development of Health and Safety at Work: The Case of Non French-speaking Immigrants in the French Construction Industry

Patrick Ndjom

INTERFOR-SIA, France

The object of this communication is to draw up a profile of the inherent health and safety risks for migrant workers in countries other than those where their native language is spoken, and to call upon all those involved – notably employers – to grasp the opportunity afforded by new management styles, such as corporate responsibility, to render their system of health and safety at work more reliable and sustainable.

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[SY47-02]
ULU as a Model for Standards and Conformity Assessment Education Worldwide

Patrick Boyle

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This presentation will show how UL university designs and delivers Standards and Conformity Assessment education in the context of the increasing complexity of product innovation, fast technological change, increasing efforts to harmonize global standards and the way in which adults learn and best apply and retain that learning.
In this presentation, Mr. Boyle will describe the design and delivery process for education programs taking into account the different ways in which adults learn based on their core types of intelligence and the cultural learning styles associated with delivery of training in a global organization with global customers. The presentation will also address how UL University measures the success of its Education programs at the reaction, learning, application and results stages of Kirkpatrick's Training Effectiveness Levels.
UL University is engaged in building a number of curricula, which address the learning, application, retention and updating of knowledge, skill sets and behavioral attributes associated with educating both employees and external parties on Standards and Conformity Assessment.

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[SY47-03]
A Novel Health and Safety Messaging Technique

Bassam Burgan, Edurne Nunez Moreno

The Steel Construction Institute, United Kingdom

Research has shown that the Trojan Horse Health and Safety Messaging technique is an effective communication tool in raising awareness of Health & Safety issues and in effecting positive behavioural change amongst construction site operatives.

The salient feature of the technique is that it communicates Health & Safety information through pictorial messages at point of use. This influences workers' actions without direct management intervention and helps overcome language barriers.

A research project was developed to assess the effectiveness of the technique. The project involved the participation of major construction contractors. Surveys were carried out across 17 sites where Trojan Horse messages were displayed on construction components (steel beams, precast slabs etc.). 135 operatives were interviewed face-to-face and a statistical analysis of the data collected through the site surveys was undertaken.

The first phase of the study showed that site operatives were generally highly aware of the Trojan Horse messages and application of the technique resulted in very high levels of information uptake. The results from the second phase showed that awareness of the messages amongst site operatives increased after repeated exposure to the messages. Site observations also suggested a positive impact on operatives' behaviour after implementation of Trojan Horse messages.

The ongoing third phase of the Trojan Horse project aims to improve construction site safety by maximising the uptake of this messaging technique. To achieve this objective, new messages will be designed and a website developed. This will promote the use of the technique and maximise the exposure of the Trojan Horse.

For now, the construction industry remains the focus for development; however the messaging technique has a far wider application. Its pictorial nature makes it a highly flexible technique for those needing to communicate health and safety messages in any industry to international workforces regardless of their native language.

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[SY47-04]
Case Study- Designing of a Training and Communication Program for Safe Use of Fertilizers and Agrochemical Products in Mexico

Jose Luis Covarrubias

Covami Consultores, Mexico

Producing and commercializing fertilizers and agrochemical products implies an important social responsibility, not only for the producing company but also for the farm workers using them. Who most likely speak a different language and share different cultures. Besides, production and commercialization of products for agriculture are seasonal type. Therefore, nonpermanent employment is a usual practice in this kind of business. These existing circumstances and the potentially hazardous features of chemical products for agriculture make teaching knowledge on Safety and developing safe-work skills become a singular opportunity.

Due to the Mexico's historical origin, indigenous languages and Spanish are the Mexican languages. They have equal use validity across the country. The Spanish is the official language in Mexico. The Mexican Constitution defines the nation as a multicultural country in recognition of the indigenous people and officially admits sixty-five indigenous languages. If it is added the intercultural communication difficulty between those who develop agro-technology and the final users: the farm workers, we are going to face an important challenge.

In this case study, it is presented the way a national training program for five thousand workers was developed in a country with an enormous cultural diversity. It was designed on the Ockham's razor principle, intercultural communication concepts and a hard work on summarizing the data of the potentially hazardous features of chemical products for agriculture.

The farm workers were trained to become instructors. And as additional support materials, a Safety Guide for Working with Fertilizers and Agrochemical Products was designed. The Guide was originally aimed to the producing company's employees but due to its effectiveness when teaching employees safety knowledge it was modified and customized for the products users. The Guide is graphics-based and utilizes Spanish, Nahuatl, Maya, Mixtec, Zapotec and Tzotzil, which are the main spoken languages in Mexico.

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[SY47-05]
Adult Education Theory and Learning Safety: What Next? The Case for a Learning Circle Approach to Training for Workers with Low Literacy

Phil Wadick

Monash University, Australia

People enter the construction industry with relatively low education levels. Up to 60% of subcontractors have no formal trade qualifications, many have low education levels, and the literacy and numeracy levels of the construction workforce are considerably poorer than those of the

Australian workforce in general. Some of these people leave school early because they did not like school. They may have even developed a negative attitude to school, and this could extend by association to the paperwork requirements of the job and may partly account for their reluctance to undertake training. Construction workers often consider safety training as boring and a waste of time and precious resources. This may be because classroom based training relies heavily on the written word and very often uses a 'banking' style of education that involves the trainer telling the workers how they need to behave. It very rarely works from the starting point of the participants' knowledge and experience. This paper explores the concept of 'learning circles' as a method for constructing meaningful occupational health and safety learning experiences for construction workers and others with low English literacy. It envisions a training approach that actively engages the hearts and minds of the workers with the intent of creating a strong safety culture in the industry. Many of the subcontractors in the industry have not had positive experiences of classroom learning, and modern OHS training often reinforces these sentiments. The learning circle is an attempt to validate the safety knowledge that these workers possess, by encouraging their critical reflection and reflective practice through talking, listening, sharing stories, and relevant visual material.

The suggestions outlined in this paper are based upon empirical research conducted by the author over many years, including interviews, participant observation, document analysis, and feedback from hundreds of OHS courses.

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[SY48] Occupational Safety and Health Management System in the Construction Industry

July 2, 09:00~11:00
Room: 101/102, COEX

Chairperson: **Hong-sub Ahn**, Kunsan National University, Korea
Moderators: **Youngbok Bae**, KOSHA
Byounghan Oh, KOSHA

[SY48-01]
A Case Study- "The Implementation of a Health and Safety Management System for the Cut-and-cover Stations and Tunnel Construction within the Marmaray Project of Istanbul-Turkey"

Ali Nurettin Demir

Gama Nurol Joint Venture, Turkey

The "Bosphorus Crossing", a century old dream of Istanbul, is now being realized through the Marmaray Project, which provides a modern fast rail-track transportation scheme connecting the European and Asian sides of the City along a route of 76.3 km. Once the proposed system is in operation, the present transportation capacity shall be increased, from 20.000, up to 150.000 passengers per hour in both directions whereas the present total traveling time of 185 minutes shall nearly be halved.

The Contract BC1 of the Marmaray Project covers construction of a new underground route of 13.6 km, including a 1.4 km long immersed tunnel located at a depth of 56 m underneath the Bosphorus, which is unprecedented.

The case study presents a basic outline of a planning for control and management of HS risks associated with the on-shore works. A specific Health and Safety Management System (HSMS), established in accordance with OHSAS 18001:1999 and ISO 9001:2000, is implemented through an HS Plan with the main objective of achieving an HS performance in compliance with the Legislative and Project requirements. The HS Plan incorporates a risk assessment and mitigation plan (RAMP) for the control and management of risks. The HS performance is periodically assessed in terms of key performance indicators and qualitatively that the necessary preventive and mitigation measures are taken for a continual improvement with a particular emphasis and priority on the areas of concern, identified from prevailing deviations and non-conformities from/to HS applications and root-cause analysis of accidents.

The rate of potential fatality is estimated for the total duration of the Project on the basis of an assumed relationship between the risk level and HS performance. Ultimately, additional risk control measures are implemented until the residual fatality rate is as low as reasonably possible (ALARP).

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[SY48-02]
Occupational Safety Action Plan in Construction Sector in Tunisia

Halim Hamzaoui[1], Dhouha Rezgui[2], Mounir Aissa[3], Jilani Chibani[2], Lotfi Chemli[2], Ali Rejeb[2]

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The construction sector is the 4th cause of occupational injuries in Tunisia with more than 7000 accidents a year. However, it occupies the first place in number of fatal injuries with more than 50 accidents a year that represent 40 % of the total number of fatal accidents.
To reduce at least this number especially of grave and mortal injuries, the wakefulness commission, a body including all the government departments working in occupational safety in Tunisia, set up an action plan containing a sensitization of the social partners as for the gravity of these accidents and for the interest of the prevention through the organization of two national conferences in 2003 and in 2008 and of sector-based and regional tripartite meetings, but also follow-up visits of construction sites allowing to verify the means of safety on the ground. The social security national organism also set up loans and subsidies for the benefit of companies which want to invest in the safety.
This program allowed a compression of the number of injuries in construction sector in spite of an expansion of the number of employee with one decrease of the number of injuries of 6990 in 2004 to 5581 in 2006 and of the number of fatal accidents on construction site of 56 in 2004 in 50 in 2006.

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[SY48-03]
Challenges to Effective OHS Consultation on Large Civil Construction Projects

Phil Wadick

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Most major construction sites place a heavy emphasis on OHS management systems which often takes the form of documented policies and procedures. However, these do not always capture the hazards associated with the many non-routine jobs on a constantly changing site. Workers often perceive that management place more emphasis on getting the paperwork correct rather than listening to their ongoing health and safety problems. The heavy reliance on paperwork silences the many workers who struggle with literacy. The boss vs. worker struggle often means that workers are reluctant to speak up with their real safety concerns. The constant drive to keep costs to a minimum creates a subtle message that OHS is not as important as profits and can result in cutting corners. Many subcontractors make minimum safety efforts; many of the OHS representatives do not have the skills or confidence to bring their concerns to a management who is perceived to care little about answering the hard questions. Workers notice what managers pay attention to rather than what they say or what the procedures/documents say. This paper proposes an approach to training both managers and OHS consultation representatives to overcome some of these problems. It requires a cultural shift in which workers will make suggestions because they believe that they are listened to and acted on. Data for this project was gathered from focus groups comprised of individuals who attended 4-day OHS Consultation courses for OHS representatives and OHS committee members. These 4-day encounters provided a valuable forum to problematise the practical implementation of OHS, from the point of view of the construction worker, whose voice is often marginalised and rarely taken seriously.

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[SY48-04]
Start Safe Stay Safe: The Burj Tower, Dubai

Kyung Jun Kim

Samsung C & T Corporation, Korea

This presentation is intended to introduce the site safety activities and systems applied to the construction of the World's tallest building, The Burj Tower in Dubai, UAE.

The Burj tower project team has developed various safety systems and activities to enhance working conditions and safety performance.
These include fire safety, by the installation of a temporary fire fighting system, which pumps water to the top of the building and the safety screen system around the building which climbs with the progress of the structural works, to prevent workers and materials falling over the slab edges.
The manpower is monitored and controlled by an electronic RFID system combined with PMIS. This system shows

manpower status with real time action to enable up to date reporting and fast management decisions on any particular situation.
The Burj tower site has carried out regular evacuation drills, every 4 months from the start of construction, with over 8,000 workers being successfully evacuated to designated registration points, within one hour. The evacuation procedures having a detailed plan from the basement to the top of the building, including the evacuation of the Tower crane operators, support and coordination with the client, Subcontractors and the Dubai Municipality.
The Burj Dubai, being a high rise work place, has seriously considered the safety facilities that are in place. There are safety catch netting, edge and shaft protection, working platforms, lanyards and other precautions installed and maintained.
There is also an entry permit system to cater for unauthorized and unexpected visitors.

To construct a high rise building successfully, without accident, all the concerned activities should be well controlled and coordinated. The Burj Tower site hopes that our site safety measures will be helpful in enhancing your understanding of the precautions required to ensure a safe environment in high rise construction.

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[SY48-05]
Proposal for a Management in Safety at Work System for Civil Construction

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Inside the productive chain of civil construction, safety searches in prevention its main focus, always carrying out interventions through the correction of mistakes, from the failures and no conformities of the process and the legislation avoiding thus, the consequences that can represent the accident.The costs of accidents can be of great proportions or, even, non-computable, considering that human life has no price. Being so, through this the enterprises start believing that competitivity and profit are not the fundamental elements for its organization where they demonstrate through the search of continuous improvement of its process the concern about the issues of safety at the work environment.
The objective of this research is to develop the System of Work Safety and Health Management – SGSST for enterprises of the civil construction industry, in this segment, 98,28% have up to 99(ninety-nine) employees according to the data from the Ministery of Work and Employment – TEM, taking as basis the guide lines of the International Work Organization – OIT about systems and management of safety and health at work. The SGSST proposal was implanted, applied and monitored in an enterprise of civil construction in the state of Pernambuco. The results obtained showed us a significative reduction of the accidents risks situation generating a direct improvement in the conditions of the work environment, establishing a new culture inside the enterprise through preventive actions, making possible that the guarantee of an implementation of the work safety management system may bring improvements to the productive system with productivity.

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[SY48-06]
Development of a Computer Simulation Model as an Emergency Evacuation Training Tool for Heavy Industrial Projects

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According to the U.S. Bureau of Labor Statistics, fires and explosions kill more than 200 and injure more than 5,000 construction workers each year. In the U.S. alone, there is a long and tragic history of workplace fire related disasters attributable to improper emergency evacuation plans. Fire hazards in the workplace can be particularly disastrous for heavy industrial projects because of the complex nature and the scale of these projects and the detrimental effects of toxic chemical fumes released by the fire.

To protect workers in the event of a fire or explosion, the Occupational Safety and Health Administration (OSHA) requires employers to provide proper exits as “Means of Egress” and appropriate training in case of emergencies. For each construction project, OSHA requires an “Emergency Action Plan” that describes the preparation and procedures that must be taken to ensure employee safety in dangerous situations. Employers must provide enough exits in the proper arrangement for quick and safe escape. Floor plans showing emergency escape routes leading to the exits must be readily visible throughout the project site.

However, in the constantly changing, dynamic project environment, the "Emergency Action Plan" for heavy industrial projects may need frequent updates. The evacuation maps or floor plans may quickly become out-dated as the construction progresses. Workers may give these plans and updates only cursory attention.

This study was conducted to analyze the effectiveness of using computer simulation model to supplement maps or floor plans in safety training and management for changing situations. Simulex was used to model various escape routes and to identify potential problem areas of the evacuation strategy. Based on validation using real project, this study highlights the efficacy of simulated emergency evacuation as a training tool that visually shows constantly altering means of egress.

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[SY48-07]
Risk Prediction System of Construction Accident

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Korea Expressway Corporation is the governmental investment organization working on the highway construction and managements.
Korea Expressway Corporation has adopted "Risk Prediction System of Construction Accident" which was developed by our own to protection of life of the people from the construction accidents.
Our company put in place the "Risk Prediction System of Construction Accident" to deliver the life-saving mediations from the accident of construction sites recognizing statistical analysis indicating the fact that deaths from the construction areas are much higher than those from traffic accidents.
Through the investigation of accidents case from 1997 to 2006, we found that construction accidents were repeated.
To prevent these reiterating accidents, Korea Expressway Corporation has developed the "Risk Prediction System" through the statistical analysis of accident of construction sites.
First, we built the "Accident Reporting System" which result in simplifying office procedure through entering the information of construction accidents.
Next, we built the "Accident Analysis System" that automatically process the accidents data which was entered in the "Accident Reporting System".
Consequently, through the matrix analysis of the above data, "Risk Prediction System of Construction Accident" has been developed which can forecast the risk of construction areas.
By predicting the risk rate, level of danger estimated and managing program has been shown depending on the degree of danger. And we took up a policy of utilizing the managing program as the control criteria in the construction field.
By means of building the "Risk Prediction System", accident rate has been reduced by 50% through the prevention of construction accidents.
Korea Expressway Corporation will continue to work on preventing the construction accidents by continuing complementation and improving the system that user can utilize the system more easily.

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[SY48-08]
The Safety and Health Management System in the Construction Industry

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KOSHA 18001 is the Safety and Health Management System developed by KOSHA.
This system is voluntary and systematic accident prevention activities that an owner find potential risk in workplace periodically and continuously improve potential risk in the workplace so that workers work in the safety place
The responsibility of government to support workplaces for constructing OSH Management System is clearly stated in the Industrial Safety and Health ACT in KOREA and KOSHA has started to implement this system in the manufacturing and construction industry since 1999.
This certificate system consists of separate procedures among clients, general and sub contractors.
It is estimated that KOSHA 18001 reduced accidents in the construction site occurring under both the general contractor and the client.
In 2007, the subcontractor certification program was initiated, requiring cooperation between general and subcontractors.
Currently, KOSHA has certificated six clients, ten general contractors and twelve subcontractors.
This flowchart shows the PDCA cycle on the construction safety management system procedure.

KOSHA consults and recommends construction companies to develop safety management systems applying risk assessment in the workplace and the procedure for safety management system in the construction site is as follows.
The risk assessment should be carried out by the project manager of subcontractors.
Approval of this assessment should be done by site manager of general contractors

Cooperating to minimize high-level risks is discussed at the safety meeting.
Providing safety education to workers and installing safety devices are based on safety meeting discussion
And then they check the effectiveness of safety meeting decisions and improve the work methods.

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